DOCUMENT RESUME

ED 147 223 SO 010 467

AUTHOR Spicer, Brian, Ed.; And Others
TITLE Space in Change. The Global System, Level 2.
PUB DATE 73
NOTE 198p.; For related documents, see SO 010 466-468; Photographs, figures and maps may not reproduce clearly due to poor reproducibility of original document
AVAILABLE FROM Jacaranda Press, 65 Park Road, Milton, Queensland, Australia 4064 ($6.00)

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS Agriculture; Area Studies; Communism; Ecological Factors; Economic Change; *Economic Development; Economic Progress; Environmental Education; Futures (of Society); *Geographic Concepts; *Geography Instruction; Land Use; Learning Activities; *Living Standards; Population Trends; Secondary Education; Social Change; *Social Studies; Social Systems; Textbooks; Trend Analysis
IDENTIFIERS Africa; *Australia; Europe (East); United States

ABSTRACT

Part of a geography series which stresses understanding of the environment through mastery of specific skills and concepts, the secondary level textbook examines how and why different environments have changed through time. The book is presented in eight chapters organized around the three main themes of change in local areas, land use, and the impact of ideas on land use. Chapters I and II describe recent attempts to increase the level of development and improve the standard of living in Tanzania and in the Kaira District of India. Chapters III and IV cite recent intensive development which has occurred in outback Australia as a result of mining, irrigation development, and scientific research. Chapters V and VI investigate the nature and process of development of the United States from 1607-1900 and provide case studies of farmers in North Carolina, Pennsylvania, and Iowa. Chapter VII traces the changes which followed the introduction of communism in eastern Europe. The final chapter suggests questions and activities for evaluating student skills and understandings of textual material. The format of each chapter generally includes background information, illustrations, maps, graphs, and discussion questions in addition to activities such as role playing, surveys, library research, map work, class reports, and written essay assignments. Cognitive, affective, and psychomotor objectives are presented in the introduction. (Author/DB)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

ED147223

The Global System Level 2

SPACE IN CHANGE

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

B. J. Spicer

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

SO 010 467

SPACE

CONTRIBUTORS

J. G. Hajdu
Monash Teachers College, Melbourne

K. R. Hallett
Wangaratta High School, Vic.

J. Kent
Formerly University of Dar es Salaam, Tanzania

J. A. Lyne
Scotch College, Melbourne

R. Pask
Holland Park Comprehensive School, London

N. Wilkinson
Formerly Presbyterian Ladies College, Melbourne

The Global System
IN CHANGE

EDITORS

Brian Spicer
Lecturer in Education,
Monash University, Melbourne

Michael Achurch
Geography Master,
Scotch College, Melbourne

Kevin Blachford
Research Assistant,
Curriculum and Research Branch, Vic.

William Stringer
Lecturer in Curriculum Studies,
Melbourne College of Education

The Jacaranda Press

First published 1973 by
JACARANDA PRESS PTY LTD
46 Douglas Street, Milton, Q.
32 Church Street, Ryde, N.S.W.
37 Little Bourke Street, Melbourne, Vic.
142 Colin Street, West Perth, W.A.
154 Marion Road, West Richmond, S.A.
57 France Street, Auckland, N.Z.
P.O. Box 3395, Port Moresby, P.N.G.
122 Regents Park Road, London NW1
70A Greenleaf Road, Singapore 10
P.O. Box 239, Makati, Rizal, Philippines

Typesetting by Savage & Co. Pty Ltd, Brisbane
Printed in Hong Kong

© B. Spicer, M. Achurch, K. Blachford, W. Stringer 1973

National Library of Australia
Card Number and ISBN 0 7016 0702 5

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of the publisher.

Contents

Acknowledgments vii
Introduction 1

CHANGE IN LOCAL AREAS

1 Change in traditional Indian society: Anand and the Kaira District 4
2 Change in traditional African society: Tanzania 13
  Unit A: Change in Africa 13
  Unit B: Education in a developing country 16
  Unit C: Life for the majority 20
  Unit D: The changing landscape 26
  Unit E: Development of an urban landscape 35
  Unit F: *Ujamaa*—Tanzanian change 48
  Unit G: Variations in change 53
3 Change comes to an ancient land: irrigation and mining in north-west Australia 55
4 Change through scientific research: the Esperance district of Western Australia 72

THE SPREAD OF LAND USE

5 Europeans settle the United States, 1607-1900 80
6 The modern farmer in the United States 111
  The Lee farm in North Carolina 115
  The Patton farm in Pennsylvania 119
  The Lindsay farm in Pennsylvania 123
  The Greenfield farm in Iowa 127

THE IMPACT OF IDEAS ON LAND USE

7 Eastern Europe 132
  Unit A: Communism—the force of men's ideas in space 132
  Unit B: Building modern economies 138
  Unit C: Reorganising farming 144
  Unit D: Living in communist cities 155
  Unit E: Breaking down the differences 164
8 Evaluation 177
Index 187

Acknowledgments

The editors and contributors are greatly indebted to a number of persons and organisations for their valuable assistance. In particular, they wish to express their gratitude to the following:

Derek Townsend
V. McGrath
Helen Freeman
Surveys and Mapping Division, Ministry of Lands, Housing and Urban Development, Dar es Salaam
Arcard Mushumbusi, Azania Secondary School, Dar es Salaam
Longman Group Limited, Burnt Mill, Harlow, Essex
Constable & Co. Ltd, London
Mrs Helen Crone, Tom Price, W.A.
Hamersley Iron Pty Ltd
Department of Agriculture, Western Australia
Mr and Mrs H. Greenfield, Ackley, Iowa, U.S.A.
Mr U. L. Lee, near Raleigh, North Carolina, U.S.A.
Mr A. H. Lindsay, Freeport, Pennsylvania, U.S.A.
Mr and Mrs W. V. Patton, Kittanning, Pennsylvania, U.S.A.
National Gallery of Art, Washington D.C., U.S.A.
Soil Conservation Service, Armstrong County, Pennsylvania, U.S.A.
U.S. Department of Agriculture, A.S.C.S. Photo Laboratory
U.S. Department of the Interior, Geological Survey, Topographic Division
The American Geographical Society, New York, U.S.A.
Miss S. Cameron, Flemington High School, Vic.
Mr and Mrs J. Stringer, Merrilands High School and Princes Hill High School, Vic.
Society for Cultural Relations with the U.S.S.R., London
Novosti Press Agency, London

Introduction

TO THE STUDENT

This is the second of four books on the Global System. The first was titled *Man and Space;* this second book is called *Space in Change.* In the first book we were concerned with examining various spatial systems as they exist at present. In this book, we are concerned with how, and why, different environments have changed through time.

Change is always with us. The majority of you reading this book will have changed schools within the past three years; you will have made new friends, and discovered new hobbies; some of you will have moved to new houses. There are very many changes which can, and do, affect each of us at various times. Some of these changes will be so slow that we will hardly notice them happen; others will be so fast that the whole world will be aware of them. Can you think of any slow, or rapid, changes?

However, there is one reason for change which is common to most countries and most peoples. It is that people seek change in order to improve their way of life, to improve their standard of living, to increase their level of development. Do you know what is meant by the terms 'standard of living' and 'level of development'? Can you suggest meanings for these terms?

For some countries, such changes or developments are easy, effective, and very rapid. For other countries, development is a slow and difficult process. With the exception of parts of the Outback, development in Australia has been comparatively easy and effective; as a result, we are often not able to understand properly the problems faced by those countries whose level of development seems to lag so far behind our own. This book aims at increasing your understanding of the problems of development, and of the various ways in which people have met and are meeting them. After studying the book you should be better able to appreciate the difficulties faced by other peoples, the efforts they have made to overcome them, and their hopes for the future.

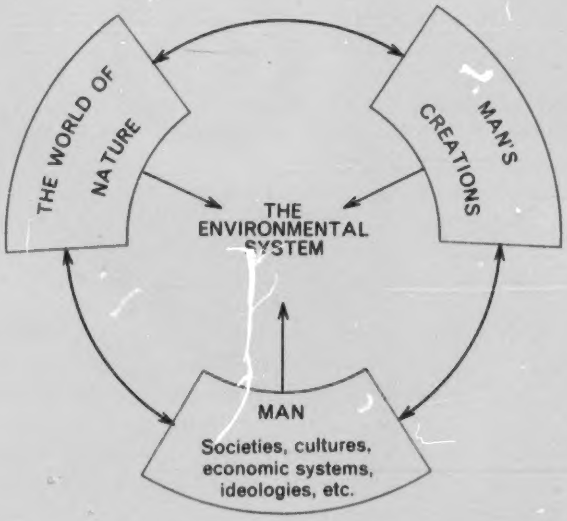
We trust that you will enjoy reading and studying this book as much as we did planning it.

Brian Spicer
Michael Achurch
Kevin Blachford
William Stringer

TO THE TEACHER

Space in Change provides for further development of the concepts, knowledge, and skills that were introduced in *Man and Space,* the first book in the Global System series. Level Two is, however, organised around the idea of 'change': the alterations, the adaptations, and the developments that can be observed in all environments from time to time.

The environmental system (global system) functions in time. It is not a static, unalterable system, but a vibrant, dynamic entity which is undergoing continuous change—mostly very small,



sometimes very great—because the main elements in the system are themselves changing. (See the diagram on page 1.)

For example, as man farms the land the fertility of the soils will change, animal populations will be affected, and the farming system itself will alter, which at the same time will cause further changes in the environmental system. Similarly, changes in man's ideals (for example, a move towards resource conservation at all costs), or in his economic systems (for example, a movement away from capitalism), will cause changes in the way he uses the resources of nature, and indeed in his own creations. These changes in turn will alter the various agricultural, manufacturing, urban and other subsystems, and ultimately the whole environmental system.

The system is in a constant state of change. Some changes are so slight as to be almost unnoticeable. Some are noticeable only after a long period of time, while others are of immediate impact and attract attention throughout the world. The changes wrought by man's new-found interest in 'anti-pollution' are being felt right around Spaceship Earth today.

In this book, the changes with which we are vitally concerned can be summarised as follows:

- Recent attempts to increase the level of development and improve the standard of living in two places where the traditional 'way of life' has been unaltered for centuries: Tanzania on the African continent, and the rural communities of the Kaira District of India.
- The recent changes which have occurred in outback Australia, stimulating intensive development and initiating settlement in areas where the 'elements' had previously held Europeans at bay. The specific studies are concerned with changes due to mining and irrigation development in the north-west, and due to scientific research at Esperance.
- The nature and process of the development of the United States during the period 1607–1900, with a brief comparative study of the modern farmer in three American states.
- The changes which followed the introduction of a new philosophy in eastern Europe. Specifically, we are concerned here with the developments that have taken place in the Soviet Union since the introduction of communism. This study has been included because we believe that it is wrong for secondary students to spend six years involved in considering other people, other countries, other areas, and yet—in the majority of cases—never examining this area of great world significance.

The changes that are outlined in this book have occurred, or are occurring, in places thousands of kilometres apart—and are, or have been, in response to different conditions and forces, and different ideals. However, we believe that if students are to develop a real understanding of the problems, the aspirations, and the efforts of other people then such studies are not merely important—they are essential.

At the same time, we hope that teachers and students will examine the information carefully and critically before reaching any decision about the *value* of the changes described. Some changes may be for the better, others may appear to be undesirable; this sort of value judgment can and will be made by all who use this book. We ask not that students refrain from drawing conclusions, but rather that they do so only after a critical examination of the data provided. Certainly, if this process is followed, they will be in a far better position to judge for themselves the issues of development which are constantly presented by the mass media.

Structure and objectives

As with Level One, the book is so structured that the teacher may vary the order of topics to suit the interests and needs of his students. However, the final study on the U.S.S.R. is complex, and perhaps should be left towards the end of the level.

As in *Man in Space*, the text has been organised so that the student is constantly being questioned and encouraged to examine the available data for evidence, ideas and answers. The suggested student activities and games add further strength to the idea that this book should not be used merely for rote 'learning': the student must read it, analyse it carefully, and perform many different tasks with the data. It will be, we hope, an enjoyable, interesting and rewarding challenge.

The following is an outline of the specific objectives that students should attain from a study of Level Two.

Objectives

Cognitive

1. Specific knowledge of a variety of environments—north-western Australia, European U.S.S.R., Tanzania, rural India, the United States—including a knowledge of climate, relief, agricultural and manufacturing activities, and settlement

2. Specific knowledge of the ways in which these environments have changed over time, and of the forces—economic, cultural and political—which have given rise to these changes

3. Knowledge and understanding of the following concepts, which are relevant to the studies of change developed in the book:

level of development
planned development
standard of living
'way of life'

4. The further development of concepts introduced in Level One (see page 4 of *Man and Space*), but with a specific orientation towards the notion of *change*. For example:

Location—especially in relation to changes in the location of elements

Distribution—changes in the patterns of location, for example the change from a predominantly rural population to a rural–urban pattern of settlement

Scale—change seen at a variety of scales, from the small local scale to the macronational; an understanding of the relative importance of the various forces which create change in different scale situations

Movement—changes in transport modes, for example from overland droving to cattle trains; changes in transport networks, and the significance of these in the development process

5. The further development of the ability to interpret and analyse data presented in a variety of forms

6. The ability to hypothesise about change

7. The ability to generalise about change—its nature and direction, and the forces behind it—in a variety of areas and situations

8. Further development of the ability to undertake fieldwork which may uncover appropriate data on change, for example changes in building styles and materials

Affective

1. An appreciation of a variety of environments on the earth's surface
2. An appreciation of the changes that have occurred in these environments over time
3. A willingness to appreciate that change may arise through a variety of factors and may follow a variety of paths, and that one should evaluate the effectiveness of these paths on the basis of an objective and careful examination of all available data
4. A willingness to make value judgments about the desirability of change, and of the means proposed to achieve it
5. A willingness to pursue a line of inquiry to an appropriate and rewarding conclusion
6. A willingness to work with other people, and to listen to their views
7. A positive attitude to learning

Psychomotor

1. Map-making skills—ability to use the scale to measure distance and area; ability to give directions; ability to handle simple transects, and to understand and work accurately with simple grid systems
2. Ability to sketch landscape—in the field and from secondary data, for example different types of photographs
3. Ability to apply various mathematical, scientific and general graphic skills; for example, the drawing of graphs, the reading of weather instruments
4. Ability to carry out surveys within the local area.

1

Change in traditional Indian society: Anand and the Kaira District

If you visited any home in the area around the Indian town of Anand, you would have to take off your shoes at the door. The shoes you would probably wear are *chaplis* (a heavy sort of thong), but in the home only bare feet are acceptable on the dried cowdung floor. According to the Hindu religion the cow is a sacred animal, and no one can bring cow leather into a place where food is prepared and eaten; also, a very practical reason is that the streets are so filthy that it is unhygienic to come into the home wearing shoes.

In some ways, Anand is a typical Indian town. It is overcrowded and poor; the streets are jammed with men pushing barrows of food or riding bicycles; goats, hens and cringing dogs are everywhere, while cows wander freely; there are people walking in all directions, and a few cars that drive at breakneck speed, only to brake heavily to avoid a camel entering on the right. In some areas the homes are built of hessian, old boxes and sheet iron, and water, gas and electricity are not available. However, Anand also has many schools, some fine houses, and a solid backbone of mudbrick, three-roomed homes, where the father is in regular employment, the children go to school, and life is lived in cleanliness, hope, and a certain amount of comfort. How can these two different ways of living occur in the same place?

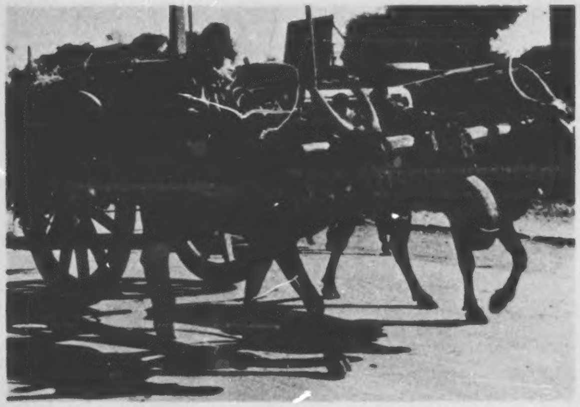
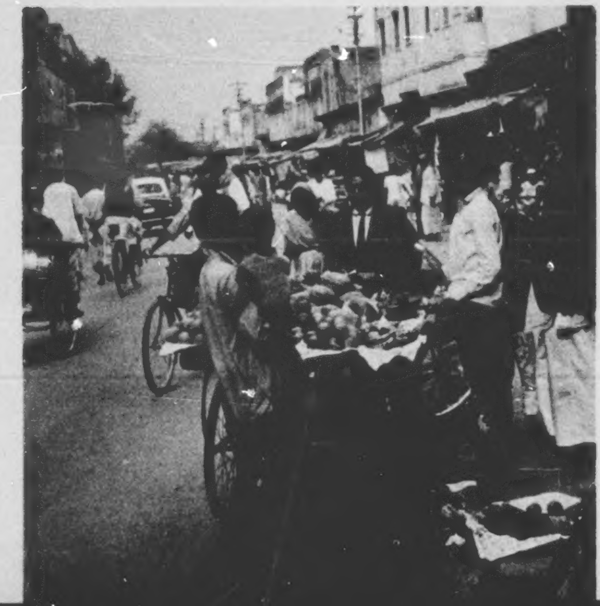


Figure 1.1: An ox-cart carries produce to market

Figure 1.2: Street scene in an Indian town. What forms of transport can you see in this photograph? To what uses are they being put?



Location

Anand will probably not be marked in your atlas; try to work out its location from the following description, your atlas map of India, and figure 1.3.

Anand lies 428 kilometres north of Bombay, and 60 kilometres south-east of Ahmadabad, in Kaira District of Gujarat State in north-west India. It is inland, but the nearest port, Cambay, is only 50 kilometres away. Once Cambay was an important port, from which the Portuguese traded centuries ago, but it has now declined due to heavy siltation. Thus the people of Anand look on the railway to Bombay as their most important transport link.

Trains are the major system of transport in India, for comparatively few Indians own motor cars, and roads are poorly developed. Everyone travels by rail, in first, second and third-class carriages. Third class is normally crowded with villagers, many of whom avoid the wooden benches, preferring to squat on the floor. Throughout the journey, vendors of refreshments on the

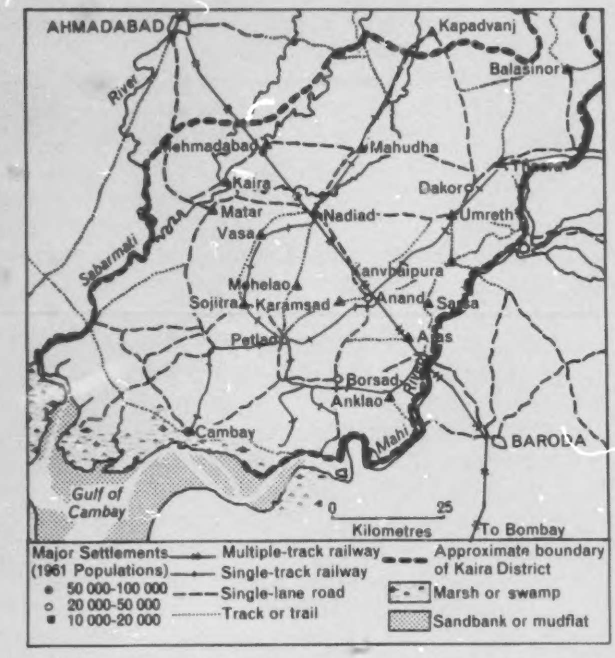

AHMADABAD
Kapadvanj
Balasinor
River
Ahmadabad
Mahudha
Thasra
Kaira
Dakor
Matar
Nadiad
Umreth
Vasa
Sabarmati
Kanvbaipura
Mehelao
Sojitra
Karamsad
Anand
Sarsa
Petlad
Alas
Borsad
Anklao
Mahi
River
Cambay
BARODA
Gulf of Cambay
0
25
Kilometres
To Bombay
Major Settlements (1961 Populations)
50 000-100 000
20 000-50 000
10 000-20 000
Multiple-track railway
Single-track railway
Single-lane road
Track or trail
Approximate boundary of Kaira District
Marsh or swamp
Sandbank or mudflat

Figure 1.3: The Kaira District—settlements and transport links

train sell Coca-Cola, peanuts, maize, wheaten cakes, bananas, or just water. At every station there are dozens more selling the same things, including a cup of tea for the equivalent of two cents.

The trains are normally hauled by steam locomotives. In fact, India only stopped building steam locomotives in 1968. Why had India been so slow to convert to diesel? (See table 1.1.)

Table 1.1: Energy resources of India and Pakistan, 1966–68

	India			Pakistan (including East Pakistan, now Bangladesh)		
	1966	1967	1968	1966	1967	1968
Coal production ('000 tonne)	67 974	68 223	70 814	1 358	1 404	1 273
Crude petroleum ('000 tonne)	4 647	5 559	5 773	497	486	512
Electric energy production (million kWh)	40 512	45 357	49 520	3 903	4 991	n.a.

Source: *United Nations Statistical Yearbook*, 1969

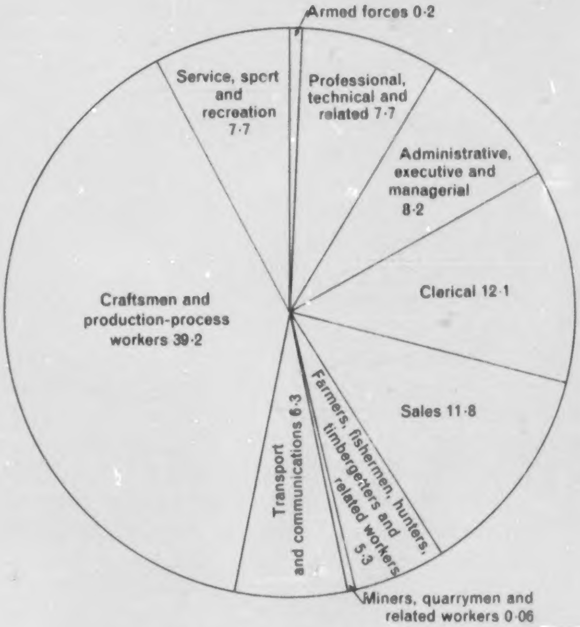
Sources of livelihood

Urban

Anand, with a population of about 50 000 people, would be an important city by Australian standards. However, the people of Anand do not have available the facilities and services that we would expect. There is one main street, and in it there are only three banks. There are no department stores, all shopping being done at stalls or in the small rooms of family-operated businesses. Anand has no supermarket; most food is sold in an open market, an enormous covered square with hundreds of stalls. The town does have four picture theatres, but there is no television anywhere in India, for the government believes that television is an expensive luxury for a developing nation. In Anand there are two small hospitals, a number of major colleges associated with the large district university, one secondary school, and five or six primary schools. There is only one service station.

An Australian city of about the same size would be Bendigo. Read the preceding paragraph again, and write down any ways you can think of in which the services offered by Bendigo, or a comparable smaller town such as Sale (see pages 117–26 of *Man and Space*), are more developed than those of Anand. Can you suggest reasons why services in Australian regional centres are different from those in Anand?

Now list the industries that are to be found in your home town. What do you think would be the



Grand total in work force: 7052
Percentage of women in work force: 29%

Figure 1.4: Percentage composition of the work force, Shepparton, Victoria

major occupational groups of the working population of Anand? The example given in the chart for Shepparton, Victoria (figure 1.4) may help you to answer these questions.

Anand is well off compared to other Indian towns. It has one large industry, the Amul Dairy, which directly employs about 2000 urban workers.

Rural

Kaira District is a lowland area, and in the dry season the countryside's hot, dusty plain, with its drought-resistant thorn trees, is reminiscent of Australia. However, the constant business of human activity is very different. Roads in the most remote areas are busy with bullock carts, herdsmen and cyclists, while men and women work in the adjoining fields and old men and children rest under leafy banyan trees. About 80 per cent of the district's population lives in the countryside, whereas Australia is highly urbanised. (In 1971, 85·5 per cent of Australians lived in urban areas.) Let us look at just one village in Kaira District, and attempt to find out how land use is organised there.

Vanskhilia is about 15 kilometres from Anand. The village lies on a plain, 2 kilometres from a sealed road, so that it is quiet and undisturbed. It is a central place, surrounded by the small fields of the villagers; all the farmers live in the village, rather than on their farm land. Here are some statistics. Read them and then consider the problems outlined below.

Population of village	1600 people
Number of families	329
Total area of land held by villagers	245 hectares
Area under cultivation	230 hectares
Number of wells	21
Number of pumping sets	5
Area under winter non-rice crops	40 hectares
Area under summer non-rice crops	30 hectares
Number of buffalo cows	275
Number of bullocks	87

On average, how much land is there per family? Do you think that there would be many non-farming families in the village? (A clue is that each farmer has one buffalo cow.) How much land is not used for farming? Do you think that there would be much waste land?

How many people are there in the average family? Is this what you imagined would be the case in India? How does the average family size compare with that in Australia? Can you guess why this is so, given that the birthrate in this area is high?

Look at the number of wells and pumping sets. What does this tell you about the rainfall of the area? Most of these wells are in the fields. Can you explain why so many are needed? Do you think that this is a village living on the borderline of starvation?

In the dry season, a number of crops are grown for cash purposes: some fields are planted with castor trees for castor oil; others are planted with groundnuts (peanuts), some with tobacco and some with cotton. Irrigation from wells, as we have seen, is available. Three of the four cash crops have seeds that are rich in oil; these find a ready market, as few Indians eat animal fats, relying on vegetable oils instead.

During the wet season, pulses are widely grown. The edible seeds of these plants are mainly kept for the villagers' own use, since they are a valuable source of protein in a country that can afford little meat or other animal protein. What kinds of pulses are commonly grown in Australia?

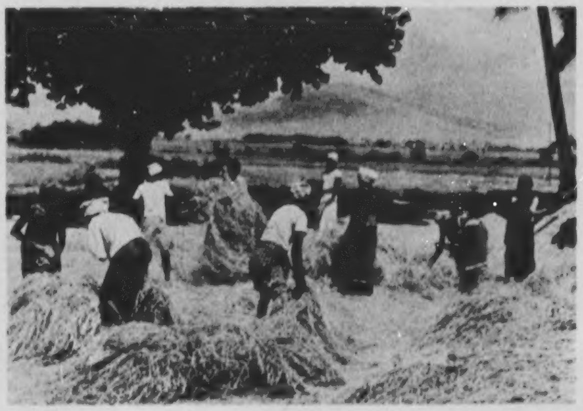


Figure 1.5: Villagers gather the cut stalks of a cereal crop for use as fodder

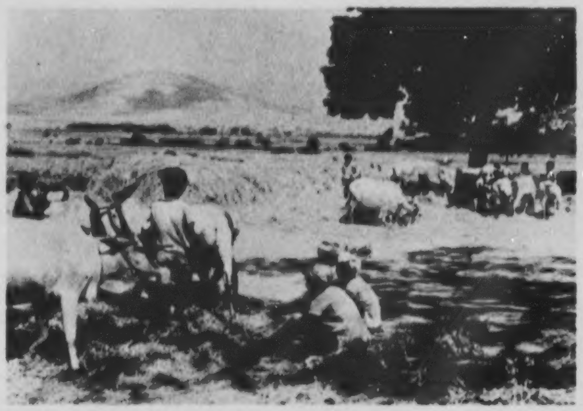


Figure 1.6: Cattle are brought in to feed. What clues to the area's climate can you find in figures 1.5 and 1.6?

However, most of the land is devoted to rice growing. Some of the seed is sold, but most of it is used in the homes as the staple food. The rice straw is fed to the farmers' cows.

We can gain some idea of life in Vanskhilia from the plan in figure 1.7 of a typical village home. The house is clean, cool and pleasant. The windowless walls are made of mud brick, and the roof is thatched.

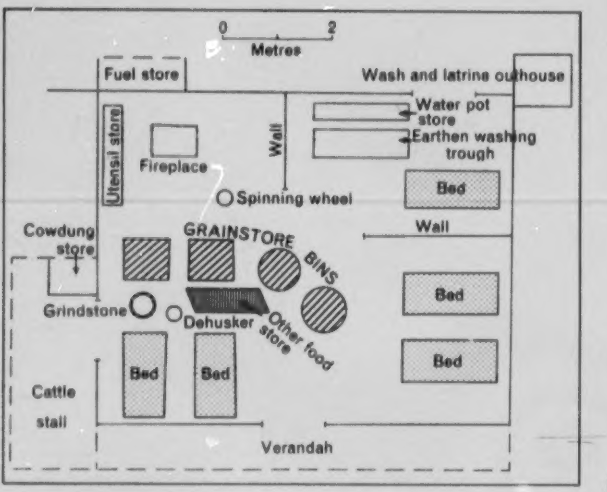


Figure 1.7: Plan of a typical home in the village of Vanskhilia

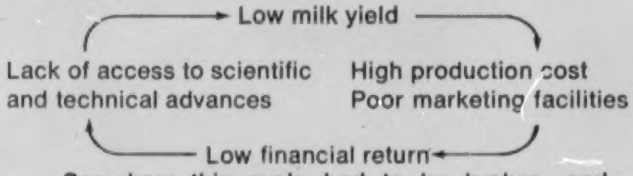
Look closely at the plan and list all the features of this home that suggest the family's way of life. Notice that the house basically consists of one large room, and that Western-style furnishings, such as tables and chairs, are entirely absent. Indians normally squat on the floor, as comfortably as we lounge in armchairs, and each child has his own nook where he does his homework. The walls are decorated with magazine pictures and with art done by the children. Utensils of clay or shiny brass are used in the spotless cooking and washing areas. All members of the family share in the daily tasks of dehusking rice, making flour, or collecting cowdung and drying it in cakes for fuel. In the cattle stall is kept the most important source of regular income—the cow.

Dairying

In the past, the people of Kaira District were mainly subsistence farmers, relying almost entirely for their existence upon the food that they produced; they were dependent on the rice lasting until a new crop was ready for harvest. As they produced few cash crops, they often fell into debt if their store of rice ran out or the new crop failed, and they had to borrow money to buy food. Villagers in the area have been known to pay interest rates of up to 80 per cent; therefore, if a farmer fell into debt, that was the end of his independence. However, by 1968 there were 120 000 farmers who enjoyed a regular daily income of about 3 rupees (approximately 35 cents Australian), from the sale of milk produced by their buffalo cows.

In the 1940s, few people in the district sold any milk at all; in fact, the cow, fed on rice straw, could barely provide enough milk for the farmer's domestic use. Today the farmer's cow produces roughly 3·5 litres of milk a day, averaging about 1300 litres of milk per year. This is a fine record, for the average production per cow in Victoria, Australia's leading dairying state, is 1800 litres a year. It is important to see how Kaira District has increased its milk production, as the problem of development in such areas is one of the world's greatest problems today.

In the traditional dairying that existed largely unaltered for centuries, the farmer was caught in a 'vicious cycle' that kept him poor. This was his difficulty:


Low milk yield
High production cost
Poor marketing facilities
Low financial return
Lack of access to scientific and technical advances

Somehow this cycle had to be broken, and eventually it was broken—at the marketing point. If one organisation could become big enough to collect the small quantities of milk, and sell it in large quantities, a regular market and more satisfactory prices could be obtained for the farmer. In 1947 the Amul Dairy was set up in Anand by the representatives of 400 farmers in eight villages, and they collected enough milk to sell to the city of Bombay, 428 kilometres to the south. The dairy began to make money, and the vicious cycle was broken. By 1968, the number of suppliers to the dairy had increased to 120 000 families in 600 villages. (Try to make up your own vicious cycle for a crop farmer—include soil erosion within it.)

To indicate how cooperative marketing has helped bring more money to the farmers, look at these figures collected in 1961, referring to the price of lime fruit grown in the district:

Village farmers' selling price:
1·5 rupees per 600 limes;
Merchants' Bombay selling price:
40 rupees per 600 limes.

The merchant or middle man sold the produce for thirty times the price the farmer received. The

Amul cooperative at Anand has changed this sort of situation, ensuring that the farmer takes a greater share of the money received from the sale of his milk.

With the higher financial return, much more money is available for scientific improvement. One programme which provides for better-quality cows is the artificial insemination scheme. The dairy keeps a herd of first-class quality bulls, and semen is collected from these and sent by the veterinary officer to the herd, where cows are artificially inseminated. This has helped to raise the quality of the herds, as well as reducing the number of bulls that previously had to be maintained by the farmers.

Figure 1.8: Bulls at the artificial insemination centre of the Amul Dairy in Anand

Look at figure 1.9, showing the number of artificial inseminations from 1961 to 1966. The success of the scheme is immediately apparent. It took some years for the farmers to grow used to this 'unnatural' idea, but the veterinary officers were all men who understood the villagers and their way of life. They have been able to overcome the farmers' suspicions, and now most members of the cooperative take part in the insemination programme. As well as this service, the veterinary officers also advise the villagers on animal husbandry, and diagnose and treat the cattle's illnesses.

With the aid of money and advice from Oxfam (Oxford Committee for Famine Relief) and the Colombo Plan countries, a factory was set up in 1964 to produce concentrated cattle feed to supplement the rice straw fodder that was the cows' main diet. The pellets produced have essential trace elements and vitamins. They also contain large quantities of protein grass, and are sweetened with molasses. Each morning, after selling the milk, the villager buys a small quantity of this fodder, which has been successful in increasing milk production.

Many other improvements became possible, once the vicious cycle was broken by the establishment of the cooperative. Make a list of any ways in which you think change could have occurred.

Lucerne growing provides a good example of an innovation that followed the first change in the

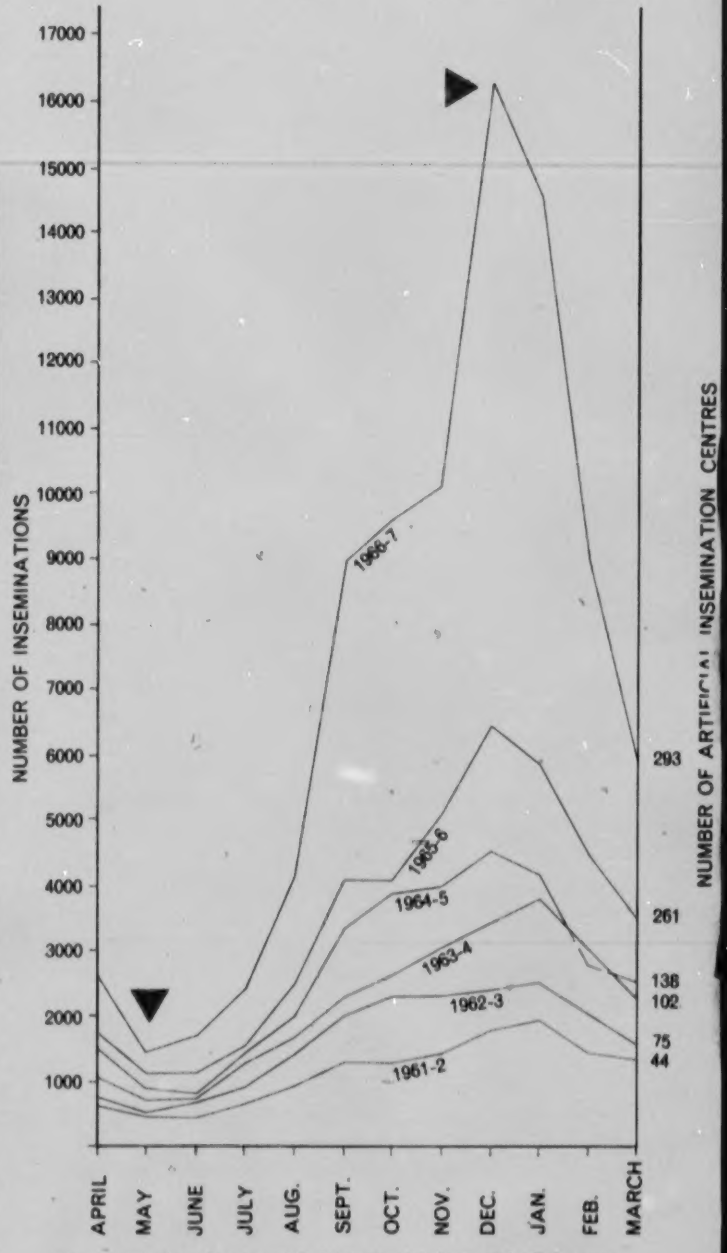


Figure 1.9: Number of artificial inseminations of buffalo cows under the cooperative scheme, 1961–66

dairying cycle. The dairy management was convinced that if the bunds (earth walls between the fields) could be sown with lucerne pasture, rather than left covered in cactus or natural grasses, then milk production would rise. Look at table 1.2, showing the results of this scheme in the village of Vanskhilia.

Table 1.2: Lucerne pasture improvement in Vanskhilia, 1965–68

Year	Kilograms of seed	Hectares sown	Farmers
1965–66	61	2·5	20
1966–67	185	7·5	60
1967–68	288	11·5	71
1968–69	162	6·5	42

Comparing the figures in table 1.2 with the first set of statistics on this village (page 6), can you explain why such a small area is devoted to growing pasture for the cows? Do you think that the cattle would live an outdoor or an indoor life? Why? Suggest one possible reason why the figures dropped back in 1968–69.

The success of the cooperative is largely due to the understanding its leaders have of the villagers. For example, the manager wanted to persuade the farmers to grow lucerne, and as sowing time was monsoon time, he would drive or walk through pouring rain, often wading through flooded rivers, in order to address the farmers on the benefits of lucerne pasture. In what way does figure 1.10 demonstrate the success of this personalised scheme?

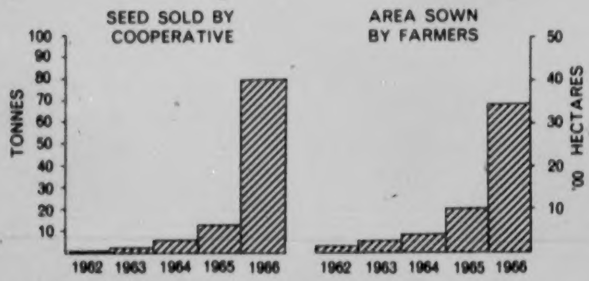


Figure 1.10: Growth of the lucerne pasture improvement scheme, 1962–66

Education of the farmer is very important for the success of the cooperative scheme. Many villagers make educational trips to the dairy, providing opportunities for the managers to teach them dairying methods or better management techniques. Work out your own translation of what the cow is saying to the farmer in the instructional cartoon, figure 1.11.

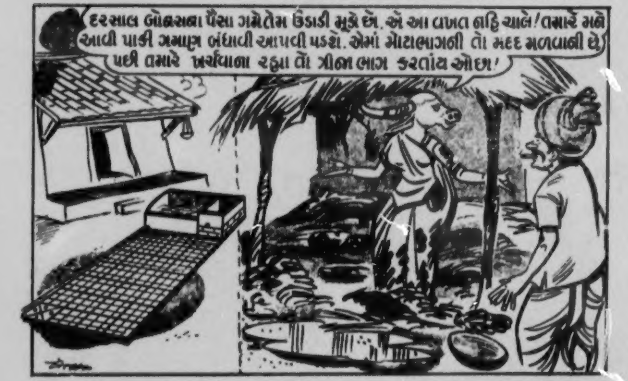

દરસાલ બોનસના પૈસા ગમેતેમ ઉડાડી મૂકો છો. એ આ વખત નહિ ચાલે! તમારે મને આવી પાકી ગમાણ બંધાવી આપવી પડશે. એમાં મોટાભાગની તો મદદ મળવાની છે, પછી તમારે ખર્ચવાના રહ્યા તો ત્રીજા ભાગ કરતાંય ઓછા!

Figure 1.11: An instructional cartoon taken from a publication issued as part of the dairy cooperative's educational programme. Try to work out your own translation of what the cow is saying to the village farmer

Another important educational factor was the establishment in 1955 of a large decentralised university in Kaira District. The Sardar Patel University was deliberately developed in this rural setting to help the villagers by the application of modern arts, science and technology to their requirements. The colleges of agriculture, dairy science and veterinary science are among its branches in Anand. How do you think this would have helped to break down further the vicious cycle illustrated on page 7?

Thus, every morning and evening in the villages of Kaira District, the members of the cooperative milk their solitary cows, and walk with a few litres of milk in brass vessels, balanced on the head, to the collecting depots. Here they are paid a regular daily income, enough for two square meals a day with some money to spare, knowing that their standard of living will rise as the dairy further expands.

Processing

The Amul Dairy at Anand is spotless and modern. It collects the milk, which is pasteurised and carefully tested, and then sent by train to Bombay. Initially, the cooperative could not pay for the milk tankers used on the railway, so the New Zealand government provided funds. Now the society makes a profit and, in its turn, helps other societies to begin operating. Millions of rupees have been made available to cooperatives in neighbouring districts.

The statistics in table 1.3 illustrate the growth stages of the dairy scheme. Draw a graph to help you identify when these stages occurred. Use the vertical axis to show the quantity of milk collected, and the base line to show the years. Set up on another axis line a scale to show the number of villages involved in the scheme.

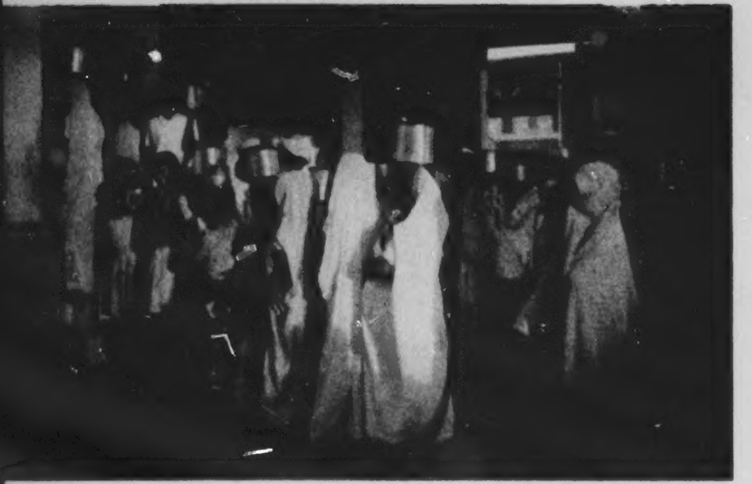


Figure 1.12: Villagers carrying milk to one of the cooperative's collecting depots near Anand

Figure 1.13: A truck collecting milk from a depot for transport to the Amul Dairy in Anand—how is the depot identified?

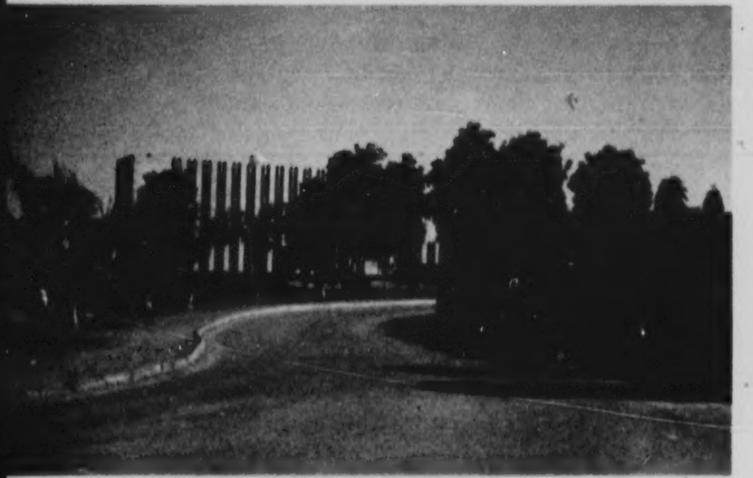


Figure 1.14: The Amul Dairy

Table 1.3: Growth of the Amul Dairy scheme, 1955–68

Year	Milk collected (tonnes)	Number of villages in scheme
1955–56	11 136	64
1956–57	14 164	107
1957–58	21 156	130
1958–59	26 557	138
1959–60	22 927	167
1960–61	23 915	195
1961–62	35 398	219
1962–63	50 417	254
1963–64	62 302	378
1964–65	60 641	421
1965–66	65 903	518
1966–67	71 608	567
1967–68	80 599	592
1968–69	113 156	600

Your graph should show not only a generally constant growth, but also some periods when production increased more rapidly than in others. We can explain this if we think of all the milk products that can be made from whole milk. List all the products that you can think of, and this will help explain the expansion periods.

In 1956 a new dairy was built, and butter manufacture began. This development was aided by the New Zealand government and UNICEF. Then in 1958 the plant was expanded, as happened again in 1960. In 1962 the dairy further expanded, when it began to manufacture baby food. In 1964 the pelletised fodder plant opened, which would help explain the expansion in that year. Then in 1966 there was further expansion, with the manufacture of cheese and milk powder. Using labelled arrows, mark each of these events on your graph, and see if they explain the growth periods.

At the beginning of the description of Anand, you read of the town's two different life styles, and you were asked the question, 'How can these two different ways of living occur in the same place?' The following information should give you further assistance in answering this question.

The dairy at Anand is called 'Amul'—in English, this word means 'priceless'. Also, the cartoon in figure 1.15 was produced in Anand.

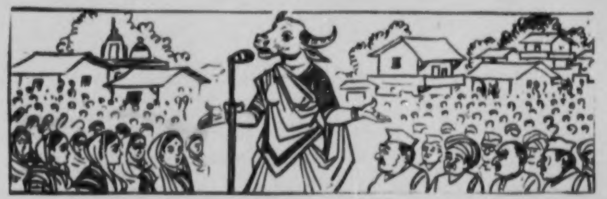


Figure 1.15

Why is the town changing? Can the name of the dairy and the content of the cartoon help you to answer the question?

FURTHER ACTIVITIES

From this study, what can you deduce about the climate of Kaira District? Write about one paragraph, making reference to each of the following:

Temperature—seasonal variation;

Rainfall—amount, seasonal variation and intensity.

To help you, all the climatic 'clues' in this study have been indicated by the symbol ▶ in the margin.

Write a paragraph pointing out the changes that have occurred in the villagers' lives since the establishment of the Amul Dairy.

Find out what you can about Australian organisations devoted to helping poor villagers in India, and in other countries where there is poverty. Some organisations to investigate are Community Aid Abroad, Austcare, and Food for Peace. You may wish to join one of them.

ACTIVITY ON CHANGE

In what ways do people in your class vary in physical appearance? You could draw up a table similar to the one below, and fill it in for your class.

	Taller than class average	White skin	Blue eyes	Black hair	Male	Weighs more than class average	Country from which family originated
John Brown	x	✓	x	✓	✓	x	U.K.
Helga Schmidt	✓	✓	✓	x	x	✓	Germany

How many of the characteristics usually occur together? For example, do all tall people have black hair? Are all short people heavy?

Scientists have investigated a number of human physical characteristics to try to define what is meant by the term 'race':

Height. The average height of the African Pygmy is less than 150 centimetres, yet the neighbouring Watusi tribesmen average nearly 180 centimetres in height. However, height may vary greatly within a group and is not fixed for a particular group. The average height of the Japanese has been found to be increasing, possibly because of changes in their traditional diet. It has been suggested that height changes slowly to adapt the group to its environment. For example, one line of reasoning runs that, over thousands of years, the Eskimo became short and bulky, to conserve body heat in the Arctic environment; on the other hand, the Negro of the northern Sudan adapted to his desert surroundings, becoming tall and thin with a greater skin surface area, which thus helps to get rid of unneeded body heat. (You may like to discuss these propositions in a class debate. How could you account for the small stature of the Pygmies of the Congo forests?)

Head shape varies from group to group, but these variations do not coincide with other variations, such as in height.

Hair form and texture also vary from group to group. The causes of this variation are not known. It may be hereditary; it may be linked with the way people treat their hair; it may be because of where they live. Perhaps it is connected with all of these possibilities!

Blood types also vary, for unknown reasons. Try to find out how anthropologists use blood types to trace the migrations of different groups of people in the past.

Skin colour is considered by many people to be the best indicator of race. Skin colour does vary from group to group, but this characteristic often does not co-vary with other characteristics. Skin colour may derive from where people have lived in relation to the sun, over many generations. What is the physical cause that makes skin colours different?

Study the three maps in figure 1.16 on page 12, and draw up a table to show how racial groupings have changed in the following areas of the world.

	Australia	India	European Russia	East Africa	U.S.A.
8000 B.C.					
A.D. 1000					
A.D. 1973					

What general patterns of change can you find by comparing these maps? Which three racial groupings appear to be dominant in the modern world? How could you account for the apparent decline of the early Mongoloids in America, the Bushmen in Africa, and the Aborigines in Australia?

Confucius, the great Chinese philosopher, wrote: 'Men's natures are alike; it is their habits that change over a period of time, and carry them far apart.' Do you agree? Can we accurately speak of 'races'? Are some groups of people superior to others?

It is nonsense to say that skin colour is a key to mental growth. A physical trait, such as skin colour, can not affect mental capacities in one way or another. However, mental qualities can be inherited. It is very difficult to justify a belief that some races are more or less artistic, intelligent, athletic and so on than others. Tests that have tried to do this only succeed in being indicators of varying levels of economic and social opportunity. (Try to find out something of the effects of protein-deficient diets on the mental capacities of very young children.) It seems impossible to separate the effects of upbringing and environment from the effects of inherited characteristics.

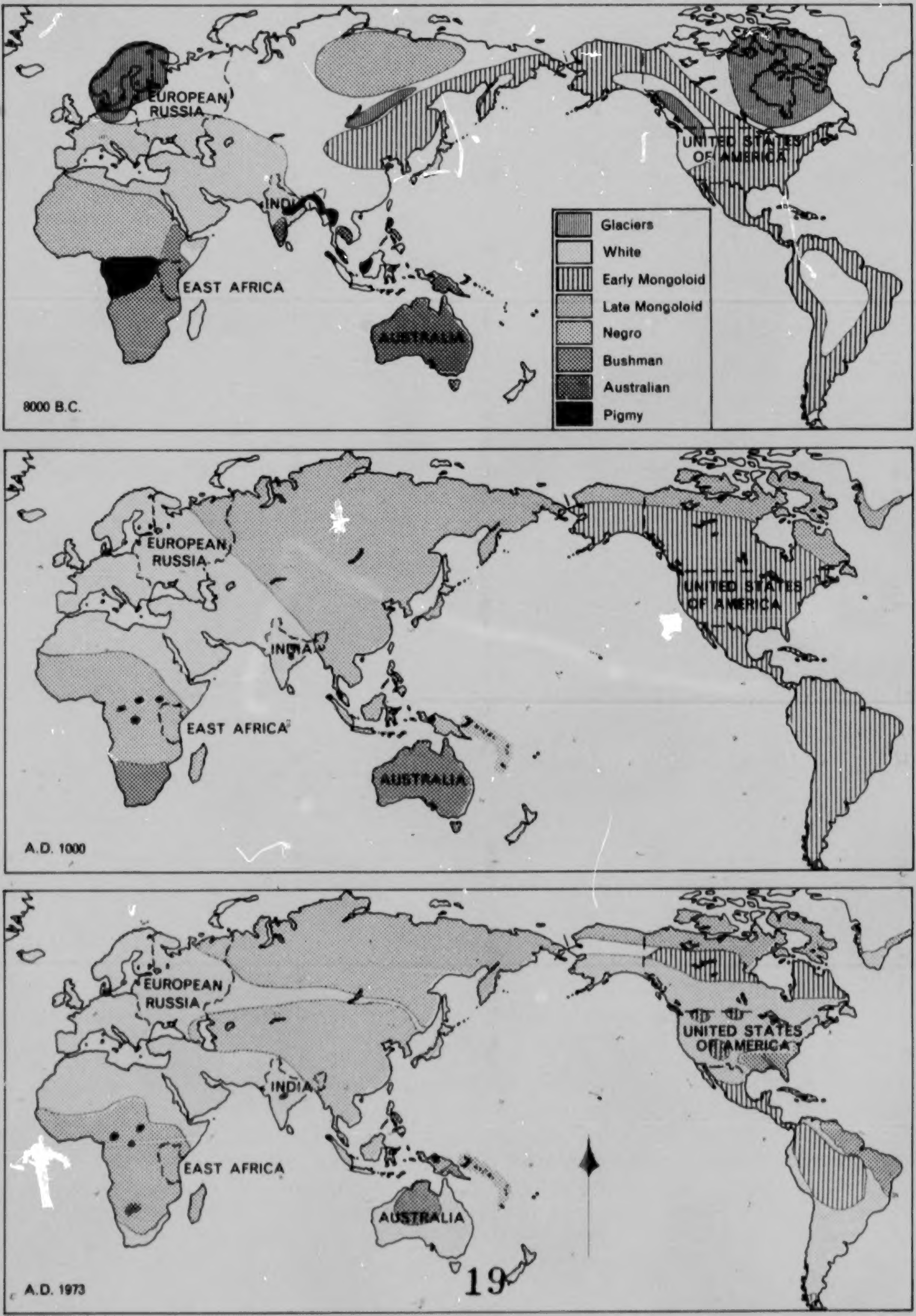

EUROPEAN RUSSIA
INDIA
EAST AFRICA
AUSTRALIA
UNITED STATES OF AMERICA
Glaciers
White
Early Mongoloid
Late Mongoloid
Negro
Bushman
Australian
Pigmy
8000 B.C.
A.D. 1000
A.D. 1973

Figure 1.16: Distribution of man at three periods in earth's history—8000 B.C., A.D. 1000 and A.D. 1973. The areas shaded in fine vertical blue lines in the top map represent glaciers—what does this tell you about the climate that probably existed in these areas at that particular time?

2

Change in traditional African society: Tanzania

Unit A: Change in Africa

The scene is a history class in an African secondary school. The buildings are modern, built of cement brick and glass. The topic under discussion is the Bronze Age—was this when the wheel was introduced into Africa by the Syrians, or had a group of Africans in Ethiopia used the wheel much earlier?

In the twentieth century it is almost impossible to imagine life without the wheel, but even today, in parts of Africa, the wheel is not known; in these places animals are not used to help ease the burden of labour—the soil is turned with hoes and water is carried by hand. Yet, at Jinja in Uganda, giant turbines convert the restless energy of the Upper Nile waters into electrical energy. Downstream at Aswan in the United Arab Republic, the second-largest man-made lake in the world holds back water that will transform barren desert into fertile croplands. There are many modern developments throughout the continent. Change has come to many parts of Africa, but has change come to most Africans?

One type of change has certainly come. Examine figure 2A.1, which shows the countries of Africa in 1938. Compare this map with figure 2A.2, showing modern Africa. What changes can you see? Which people other than Africans have influenced life in Africa?

Compare the countries in table 2A.1 and figure 2A.2 with those in figure 2A.1. For each major nation listed in the table, state the country of which it was formerly a colony or mandate. Which African countries are still colonies?

Table 2A.1: Population, area and population density for selected African countries, 1970

	Area in square kilometres	Estimated population ('000)	Population per square kilometre
WORLD TOTAL	135 781 000	3 632 000	27
AFRICA	30 319 000	344 000	11
Algeria	2 381 741	14 012	6
Angola	1 246 700	5 673	5
Botswana	600 372	648	1
Burundi	27 834	3 600	129
Cameroon	475 442	5 836	12
Central African Republic	622 984	1 522	2
Chad	1 284 000	3 706	3
Congo, People's Republic of	342 000	936	3
Dahomey	112 622	2 686	24
Equatorial Guinea	28 051	290	10
Ethiopia	1 221 900	25 046	20
Gabon	267 667	500	2
Gambia	11 295	364	32
Ghana	238 537	9 026	38
Guinea	245 857	3 921	16
Ivory Coast	322 463	4 310	13
Kenya	582 645	10 898	19
Lesotho	30 355	1 043	34
Liberia	111 369	1 171	11
Libya	1 759 540	2 010	1
Malagasy Republic	687 041	6 750	11
Malawi	118 484	4 530	38
Mali	1 240 000	5 022	4
Mauritania	1 030 700	1 171	1
Morocco	446 550	15 579	35
Mozambique	783 030	8 233	10
Namibia (South-west Africa)	824 292	632	1
Niger	1 267 000	4 016	3
Nigeria	923 768	55 074	60
Portuguese Guinea	36 125	556	15
Reunion	2 510	446	177
Rhodesia	390 580	5 270	13
Rwanda	26 338	3 587	136
Senegal	196 192	3 925	20
Sierra Leone	71 740	2 550	36
Somalia	637 657	2 789	4
South Africa	1 221 037	20 113	16
Spanish Sahara	266 000	54	0
Sudan	2 505 813	15 695	6
Swaziland	17 363	408	24
Tanzania	945 087	13 273	14
Togo	56 000	1 857	33
Tunisia	164 150	5 137	31
Uganda	236 036	9 764	41
United Arab Republic (Egypt)	1 001 449	33 329	33
Upper Volta	274 200	5 384	20
Zaire (Democratic Republic of the Congo)	2 345 409	17 423	7
Zambia	752 614	4 295	6

Source: *United Nations Demographic Yearbook*, 1970

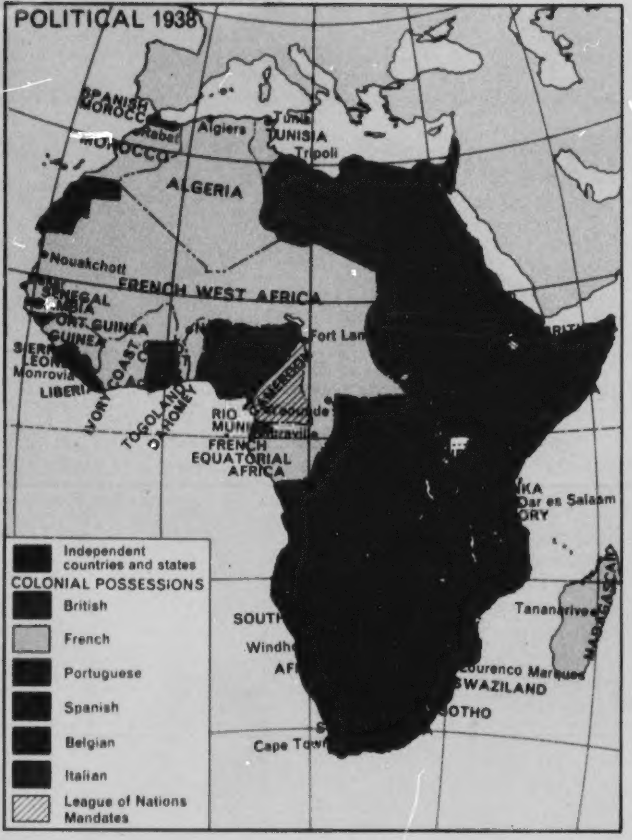

POLITICAL 1938
SPANISH MOROCCO
Rabat
Algiers
Tunis
TUNISIA
Tripoli
MOROCCO
ALGERIA
Nouakchott
FRENCH WEST AFRICA
SENEGAL
GAMBIA
PORT. GUINEA
GUINEA
SIERRA LEONE
Monrovia
LIBERIA
IVORY COAST
TOGOLAND
DAHOMEY
RIO MUNI
CAMEROON
Yaounde
Libreville
FRENCH EQUATORIAL AFRICA
Fort Lamy
Dar es Salaam
SOUTH
Windhoek
AFRICA
Tananarive
MADAGASCAR
Lourenco Marques
SWAZILAND
BASUTOLAND
Cape Town
Independent countries and states
COLONIAL POSSESSIONS
British
French
Portuguese
Spanish
Belgian
Italian
League of Nations Mandates

Figure 2A.1

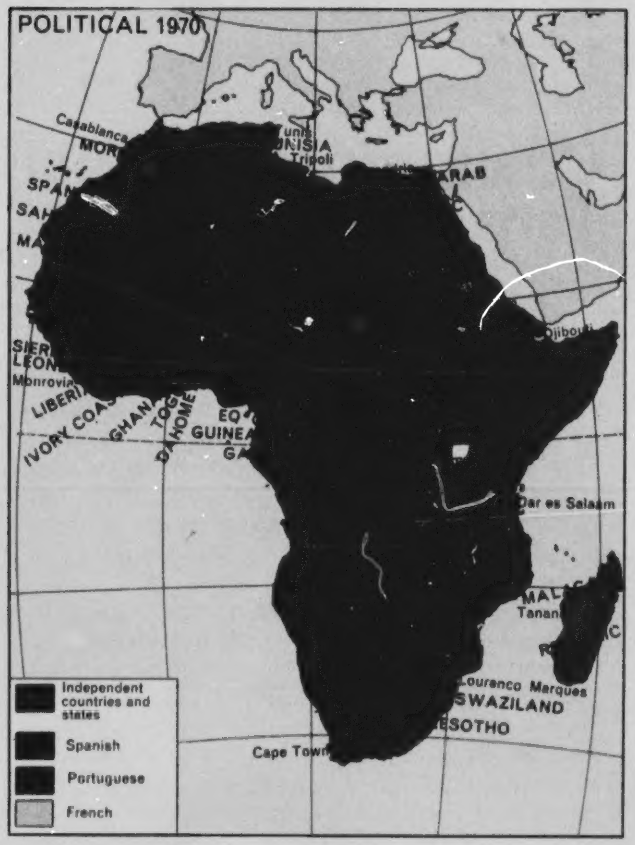

POLITICAL 1970
Casablanca
MOROCCO
Tunis
TUNISIA
Tripoli
ARAB
SPANISH SAHARA
MAURITANIA
SIERRA LEONE
Monrovia
LIBERIA
IVORY COAST
GHANA
TOGO
DAHOMEY
EQ. GUINEA
Djibouti
Dar es Salaam
MALAGASY
Tananarive
Lourenco Marques
SWAZILAND
LESOTHO
Cape Town
Independent countries and states
Spanish
Portuguese
French

Figure 2A.2

Table 2A.2: Population statistics—World, Africa and Australasia

	Population in millions			Annual increase, 1965–70 (%)	Birth rate, 1965–70 (per '000)	Death rate, 1965–70 (per '000)	Area ('000 sq. km), 1970	Density per sq. km, 1970
	1930	1950	1970					
World	2 070	2 486	3 632	2·0	34	14	135 781	27
Africa	164	217	344	2·6	46	20	30 319	11
Australia and New Zealand	8	10·1	15·4	1·9*	20	9	7 955	2

*Rate reflects combined effect of natural increase and migration
Source: *United Nations Demographic Yearbook*, 1970

The maps in figures 2A.1 and 2A.2 tell of rapid political change. Table 2A.2 shows how quickly the man-land ratio (population density) is changing in Africa, compared with Australasia and the world in general.

Africa is a large continent, with many variations from place to place. Development is uneven within small areas of any one African country, as figures 2A.3–2A.8 show. List the contrasts that you can see in these illustrations, either within the one photograph or between photographs.

It is not possible to study all the variations to be found in Africa, so in this section we are concentrating on East Africa, in particular Tanzania: this country's population (12 313 469—1967 census) is comparable with that of Australia, while in size (945 087 square kilometres) it is a little larger than New South Wales. Consult a recent encyclopedia, or an up-to-date history text, and find out the political changes that have taken place in Tanzania in the nineteenth and twentieth centuries. Are any of these changes shown in figures 2A.1 and 2A.2?

Most African countries have introduced Five Year Development Plans to organise their development. The three main problems they face are poverty, ignorance and disease. In the introduction to Tanzania's second Five Year Plan, President

Figure 2A.3: Dar es Salaam—a view near the city centre, showing a Swahili-style house with the Cooperative Building in the background

Figure 2A.5: Women returning from market along a road higher up the slope of Mount Kilimanjaro, about 1500 metres above sea level

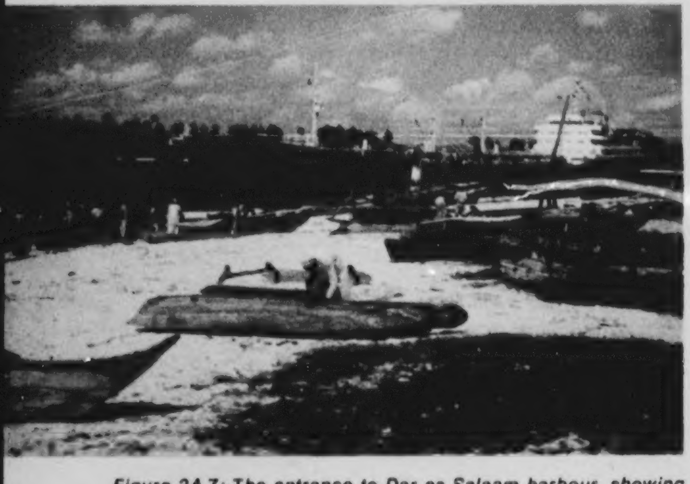


Figure 2A.7: The entrance to Dar es Salaam harbour, showing an oil tanker and the local fishing boats, called ***ngalawas***

Figure 2A.4: A scene near the base of Mount Kilimanjaro, with its two peaks—Kibo and Mawenzi—in the background

Figure 2A.6: Landscape in Dodoma Region, central Tanzania

Figure 2A.8: A university student confers with Salehe Ali (left), whose ***shamba*** *or farm is examined in Unit C of this study*

Nyerere stated, in outlining the government's priorities for the years 1969 to 1974:

> These priorities have been decided upon in the light of our objectives which are: firstly, providing an adequate and balanced diet for all our people—which means healthy bodies; secondly, providing sufficient good, and if possible attractive, clothing for all our people; thirdly, providing decent housing for all our people, and fourthly, providing educational opportunities for all the people.
>
> *Tanzania: Second Five Year Plan for Economic and Social Development, 1 July 1969 – 30 June 1974*
> (Dar es Salaam: Government Printer, 1969), vol. 1, p. viii

It is not easy for the Tanzanian government to bring about these changes, because the country's supply of money is very limited. This shortage of finance imposes limits on economic development also; in 1971 the per capita gross national product in Tanzania was only U.S.$80, compared with U.S.$2070 in Australia. Development does not just involve accumulating more money and adopting new technology; it often requires changes in attitudes and social organisation. The vital questions are how to bring about change, and where money should be spent for the maximum benefit of the country as a whole.

To plan for future change, one must examine present conditions, and factors that have brought these conditions into being. In this study, various material is presented to help you to discover some of these factors of change, and to understand how they have operated. The significance of the data given will be much greater if you can find out the Australian equivalents; as both countries have approximately the same number of people, certain comparisons can be made. For example, in working out the following exercise, what does the answer reveal to you about the way of life of people in Tanzania, compared with those in Australia?

Year: 1971	*Tanzania*	*Australia*
Number of registered private cars	35 830	4 118 137
Total number of motorised vehicles	94 364	5 289 245

If you wanted to move the whole population of Tanzania in the private cars registered in that country, how many people would have to fit in each car? What would be the figure for Australia?

Unit A has revealed the political changes that have taken place in Africa. The degree, speed and type of changes are determined largely by people, although physical environment may have a very important influence. The rest of the study is divided into six parts:

Unit B: Although headed 'Education in a Developing Country', this unit is basically intended to help you understand the way of life of Tanzanians of similar age to yourselves—in this case, students at one of the large secondary schools in Tanzania.

Unit C: 'Life for the Majority' presents material to show what life is like for over 90 per cent of the people of Tanzania.

Unit D: 'The Changing Landscape' illustrates the development of commercial agriculture.

Unit E: 'Development of an Urban Landscape'.

Unit F: This unit is called '*Ujamaa*—Tanzanian Change'. By the time you are reading this book, you will be able to investigate how successful *Ujamaa* has been. At the beginning of the 1970s, this was the new policy of development in Tanzania, stressing community living, and cooperation in work and in facing common problems. In '*Ujamaa* villages', people work together on communal land and the benefits go not to individuals but to the whole community.

Unit G: 'Variations in Change'. Africa is a huge continent. Most of Study 2 is based on Tanzania because many aspects of this country's development are representative of Africa as a whole. This last unit introduces two additional areas to show that in some countries other factors operate, influencing development along different lines.

Unit B: Education in a developing country

In any country, an important factor governing change is the educational standard of the people. For Australians, schooling is compulsory; in Tanzania, approximately half the children are able to have some degree of primary schooling (the fees have to be paid by their parents), while secondary schooling, which is free, is a privilege for the very few. From the figures in table 2B.1, work out the approximate percentage of young people in Tanzania who go on to secondary education after leaving primary school.

Table 2B.1: Primary and secondary school intakes, Tanzania, 1963–70

Approximate percentage of children undergoing some degree of primary education	50%
1963: Intake for Standard 1, primary school	136 496
1969: Output from Standard 7, primary school	59 383
1970: Intake for Form 1, secondary school (entrance to secondary school is determined by a selective examination)	7 320

Figure 2B.1: One of the classrooms of a primary school at Mgwashi in the Usambara Mountains of north-eastern Tanzania. The classroom is still in use, but is about to be replaced (see figure 2B.2)

Figure 2B.3: The University of Dar es Salaam was established in 1964 and has a total enrolment of about 2000 students. The university stands in 650 hectares of ground. This photograph shows the halls of residence and (far left) the mosque

One of the common problems in developing countries is that of the primary school leaver. The preceding figures reveal the high 'drop-out' rate during primary school (generally the result of parents' inability to pay fees, or because of sickness). What do you think these children do when they stop going to school? A large percentage of the young people who are unable to enter secondary school cannot get jobs. Think of the problems that this causes for the students, their parents, and the country as a whole.

Secondary school buildings and school routine are generally similar to their counterparts in Australia, although the study of agriculture is now beginning to play a more dominant role in Tanzanian education. However, marked contrasts can be found between the types of buildings in Tanzanian educational institutions. (See figures 2B.1–2B.3.)

Figure 2B.2: The pupils at Mgwashi helping to build their new classroom. Bricks are made from a mixture of sand, cement and water pressed into boxes as moulds, and then turned out to dry after they have set. In a number of Tanzanian villages, parents and children are building schoolrooms as part of the policy of 'self-reliance'

To understand some aspects of the life led by secondary school students in Tanzania, study the information given in table 2B.2 and figure 2B.4. When answering the questions on page 20, compare the way of life depicted with your own. The information is tabulated from the answers to a questionnaire filled in by 65 Form 2 students at a secondary school in Dar es Salaam. The school is one of the largest in Tanzania, with 900 boys from Forms 1 to 6.

The pupils have backgrounds similar to those of students at any other Tanzanian secondary school. They come from any of the 110 tribes that live in Tanzania, and fellow pupils from the same tribe may talk to one another in their tribal language. Swahili is the national language, and this is used in the primary schools. When pupils enter secondary school, they have to adjust rapidly to the English language which is used for teaching at secondary level; therefore, one of the major difficulties a pupil has to face is learning his lessons in what is probably his third language.

Until recently, most teachers in secondary schools were expatriate Europeans; however, for the first few years of the University of Dar es Salaam's existence, a high percentage of its students were trained for teaching, and now most teachers are Tanzanian. Can you suggest why English is still the language of instruction in secondary schools, despite the 'Africanisation' of staff?

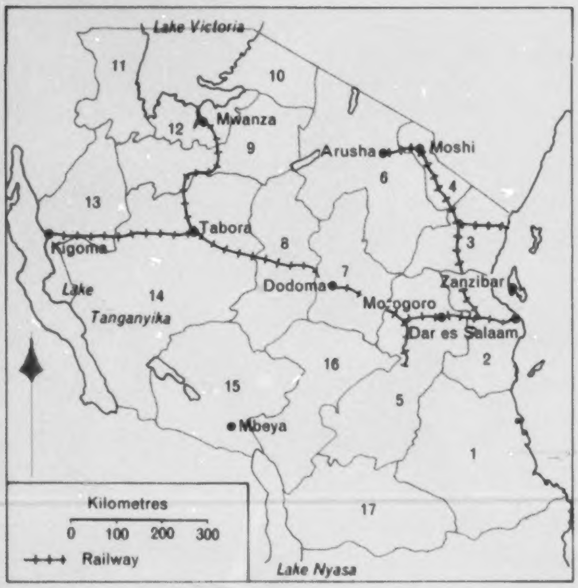


Figure 2B.4: Home regions and religions of a survey sample of 65 Form 2 boys from a secondary school in Dar es Salaam*

No. on map	Name of region	No. of pupils from region	Religion: Lutheran	Religion: Other Protestant	Religion: Roman Catholic	Religion: Moslem
1	Mtwara	3	—	1	—	2
2	Coast	27	1	—	1	25
3	Tanga	5	—	2	—	3
4	Kilimanjaro	7	6	—	1	—
5	Morogoro	4	—	—	1	3
6	Arusha	—	—	—	—	—
7	Dodoma	2	—	—	1	1
8	Singida	1	1	—	—	—
9	Shinyanga	—	—	—	—	—
10	Mara	—	—	—	—	—
11	West Lake	2	—	—	2	—
12	Mwanza	3	—	3	—	—
13	Kigoma	2	—	—	1	1
14	Tabora	2	—	—	1	1
15	Mbeya	3	1	—	2	—
16	Iringa	3	—	—	2	1
17	Ruvuma	1	—	—	1	—

* Government policy has been to mix students from all regions in the secondary schools, in order to break down the old tribal divisions; however, because of transport costs, pupils are now more often sent to schools in their home region

Table 2B.2: Answers to a questionnaire filled in by 65 Form 2 students at a secondary school in Dar es Salaam

AGE OF STUDENTS	13 years	14 years	15 years	16 years	17 years	18 years	19 years	20 years
No. of students in age group	3	4	10	9	19	14	5	1

SIZE OF FAMILY	Number of children living																								
	0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*
No. of students in each group	—	2	1	6	7	5	6	8	8	2	3	4	2	1	1	3	1	—	1	1	—	—	1	—	2

	Number of children dead										
	0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
No. of students in each group	25	19	8	5	—	3	2	1	1	—	1

PARENTS: LITERACY AND FORMAL EDUCATION	Ability to read and write			Standard of formal education						
	Not able	A little	Fluent	None	Primary: Standard 1-4	Primary: Standard 8	Secondary	Technical or teacher training college	University	Adult education (numbers also included in 'None')
Father	14	21	30	24	16	11	9	2	3	9
Mother	32	22	11	40	18	4	3	—	—	5

PARENTS' OCCUPATIONS	Work on *shamba* (farm)	Work in home	Office worker	Shopkeeper	Civil servant	Factory worker	Carpenter	Medical officer	Nutrition officer	Radio engineer	Driver
Father	36	—	10	2	9	3	1	1	1	1	1
Mother	46	17	1	1	—	—	—	—	—	—	—

PARENTS' HOME	Walls of house						Roof of house				
Building materials	Grass	Mud plaster	Mud brick	Wood	Cement brick	Kiln-baked brick	Thatch	Wood	Corrugated iron	Tin	Tile
	4	23	17	5	14	2	22	5	22	11	5

	Lighting			Fuel			
Lighting and fuel	Kerosene	Candles	Electricity	Charcoal	Wood	Gas	Electricity
	43	3	19	30	28	6	1

	Source of water					Time taken to reach source of water (excluding tap in house)						
Water supply: source and distance	Tap in house	Communal tap	Communal well	Waterhole	River	0–6 min.	7–12 min.	13–18 min.	19–25 min.	26–35 min.	36–59 min.	1 hour or more
	16	15	15	5	14	8	18	7	1	11	2	2

FOODS EATEN	Foods included in diet															
	Bananas	Maize	Rice	Ugali[1]	Potatoes	Sweet Potatoes	Yams	Cassava	Bread	Butter	Meat	Eggs	Chicken	Fish	Fruit	Milk
	43	51	53	62	38	34	25	54	49	20	62	34	35	54	50	43
	Foods most generally eaten															
	12	13	23	25	6	3	7	8	13	4	17	3	4	13	13	11

	Number of times meat eaten in a week[2]						
	1	*2*	*3*	*4*	*5*	*6*	*7*
	10	8	11	15	4	2	4

RELIGION[3]	Lutheran	Other Protestant	Roman Catholic	Moslem
	9	6	13	37

DAILY TRAVEL TO SCHOOL	Method	Number of students	Time taken				
			Less than 10 min.	10–24 min.	25–39 min.	40–59 min.	1 hour or more
	Walk	48	14 (boarders or hostel)	7	8	4	15
	Bus	12	—	2	2	3	5
	Bicycle	3	—	1	2	—	—
	Car	2	—	1	—	1	—

WHERE STUDENTS LIVE IN DAR ES SALAAM WHILE AT SCHOOL	Family or relatives[4]	School or hostel	Friends	Rented room	No answer
	34	14	4	5	8

LOCATION OF PRIMARY SCHOOL PREVIOUSLY ATTENDED	In Dar es Salaam	Not in Dar es Salaam
	41[5]	37

---

[1] *Ugali* is a mixture of flour and water cooked like porridge.

[2] Some boys did not fill in the answer to this question, probably because they eat meat very rarely.

[3] A number of Tanzanians follow none of the recognised religions, but this does not show up in these answers.

[4] The 'extended' family which includes quite distant relatives is a feature of African life.

[5] Thirteen of these students came to Dar es Salaam after Standard 4 of primary school.

How does the way of life of a Form 2 pupil in a secondary school in Tanzania compare with your own? Study the information in table 2B.2 and in the caption of figure 2B.4 on pages 18–19.

1. What can you discover about:

- the age of school pupils?
- the areas from which students are drawn?
- size of families?
- the standard of living? (Compared with the standard of living of other young people in Tanzania, is that of a secondary school pupil likely to be higher, the same or lower?)

2. What differences in outlook could there be between the two generations: students and their parents? What problems may arise between generations, bearing in mind tribal customs, according to which the 'elders' make the decisions?

3. Does there appear to be any pattern in the distribution of different religions over space? If so, can you suggest any reasons for the pattern? Consider which groups of people brought the different religions, why they came, where they settled, and their reasons for settling in these places. For example, the Arabs came mainly for trading purposes; the Christian missionaries came to spread the gospel, but also built schools and hospitals. Compare the distribution of religions with a physical map of Tanzania and with a map showing railways. Is there any apparent relationship?

Unit C: Life for the majority

In all African countries, rural population outnumbers urban population. In Tanzania, 94 per cent of the population is rural. Most people live on a *shamba* (small farm), growing food for themselves; at times they have a surplus of produce, which they sell to buy goods that cannot be produced on the *shambas.* To understand a little of their lives, examine carefully:

Figure 2C.1: Map of Salehe Ali's *shamba;*
Figure 2C.2: Seasonal calendar of activities on Salehe Ali's *shamba;*
Figures 2C.3–2C.11: Photographs of rural life;
Table 2C.1: Table of work hours on an average *shamba* in a village in north-west Tanzania;
Table 2C.2: Table of daily domestic water use;
A description of a trip home for the holidays, written by an African schoolboy (page 24).

The questions accompanying parts of this material are intended to draw your attention to certain points.

Table 2C.1: Division of labour and labour inputs for an average 0·84 hectare *shamba* in a Buhaya village, West Lake Region of Tanzania

Operation	Done by men/women (M/W)		Estimated total number of hours per year	
			Men	Women
Coffee				
Digging holes	M		64	
Manuring	M		43	
Planting	M	W	14	14
Harvesting	M	W	269	269
Hulling	M		30	
Spraying	M		—	
Transport	M		—	
Bananas				
Digging holes	M		24	
Manuring	M		15	
Planting	M	W	50	50
Pruning	M		84	
Harvesting		W		—
Transport		W		—
Coffee/bananas				
Weeding	(M)	W	273	456
Mulching	M	W		
Cutting grass		W		
Annual crops				
Cultivation		W		832
Planting		W		
Weeding		W		
Harvesting		W		
TOTAL ARABLE FARMING			**866**	**1 621**
Animal husbandry	M		605	
TOTAL AGRICULTURAL WORK			**1 471**	**1 621**
Domestic work				
Firewood	M	W	208	208
Fetching water		W		730
Cooking		W		300
Washing clothes	M	W	150	208
TOTAL			**1 829**	**3 067**

Source: *A Buhaya Village*, Bureau of Resources and Land Use Planning, Dar es Salaam

1. List those activities where the work done by the women, per year, is more than that done by the men.
2. Why do you think men are more involved in the cultivation of coffee than in growing the annual crops?
3. Which of the above statistics do you find most surprising? Why do you select this particular one?

Using the material provided, list all the things you can learn about rural life in Tanzania. Having made your own observations on such features as the size of *shambas*, crops grown, types of implements used, activities carried out and by whom, what conclusions can you draw to answer the following questions?

Scale of farming

(a) What governs the size of the plot of land cultivated?

Table 2C.2: Average daily domestic water use in the wet and dry seasons by 'average' households in two areas of north-west Tanzania

HOUSEHOLDS	Bunjiri/Ibuta		Kininginila	
Number of households interviewed	30		9	
Average number of people per household	6·7		8·5	
Number of workers in average household	4·0		4·7	
	Wet Season	Dry Season	Wet Season	Dry Season
EFFORT FOR AVERAGE HOUSEHOLD TO OBTAIN WATER				
Average number of people collecting water	1·9	1·8	2·1	2·3
Average number of times water collected each day	2·8	2·3	2·3	1·0
Distance to collect water (average round trip in kilometres)	2·9	7·0	4·5	26·1
Time per round trip in hours	0·84	1·46	1·7	5·5
Total hours spent collecting water per household on average day	4·0	4·3	5·8	11·6
Method used to carry water (number of households)				
Container on head	26	22	7	1
Bicycle	2	2	0	0
Donkey	1	5	2	8
Oxen	1	1	0	0
QUANTITY OF WATER COLLECTED BY AVERAGE HOUSEHOLD ON AVERAGE DAY (in litres)				
Quantity collected per trip	34·1	56·1	59·2	103·5
Quantity collected per day	121·3	138·6	132·4	172·3
Quantity of water used daily by one member of an average household	18·0	20·6	15·5	20·1

Source: Adapted from Research Report No. 6/11 of Bureau of Resources and Land Use Planning, Dar es Salaam

1. Refer back to table 2C.1. Which members of the household normally fetch water?
2. Suggest reasons why the water has to be carried further in the dry season than in the wet season.
3. What other differences in water collection and consumption can you note between the wet and dry seasons?
4. What is the commonest method of carrying water?

(b) How may the size determine the surplus for sale, and thus the cash income?

Distance/mobility/time

(a) How much time may be spent getting to the work area, or collecting water, fuel and goods from market?

(b) How does distance/mobility/time influence productivity?

Type of energy used

How would the type of energy used affect the output per person?

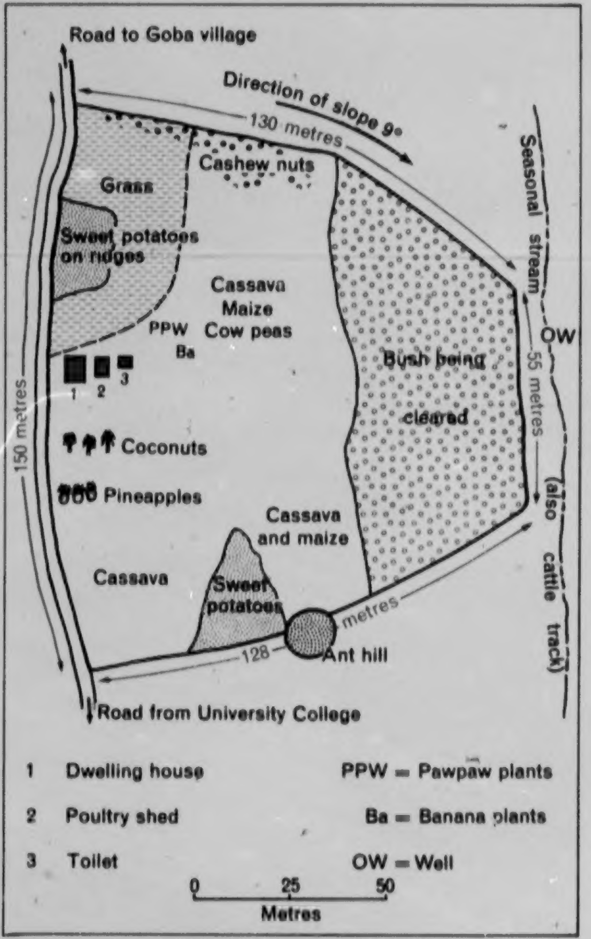

Road to Goba village
Direction of slope 9°
130 metres
Cashew nuts
Grass
Sweet potatoes on ridges
Cassava
Maize
Cow peas
PPW
Ba
Seasonal stream
OW
55 metres
(also cattle track)
Bush being cleared
150 metres
1
2
3
Coconuts
Pineapples
Cassava and maize
Cassava
Sweet potatoes
128 metres
Ant hill
Road from University College
1 Dwelling house
2 Poultry shed
3 Toilet
PPW = Pawpaw plants
Ba = Banana plants
OW = Well
0
25
50
Metres

Figure 2C.1: Salehe Ali's ***shamba****, situated in Mfuru village, approximately 20 kilometres from the centre of Dar es Salaam. (Salehe Ali himself appears in figure 2A.8 on page 15.)*

1. *Calculate the distance round the boundary of the* ***shamba****. How long would it take you to walk round it?*
2. *What is the approximate area of the* ***shamba****?*
3. *Of what would the diet of Salehe Ali's family probably consist?*
4. *What is grown near the house? Why?*
5. *Which of the crops is grown to sell?*
6. *How far do people have to walk to get water?*

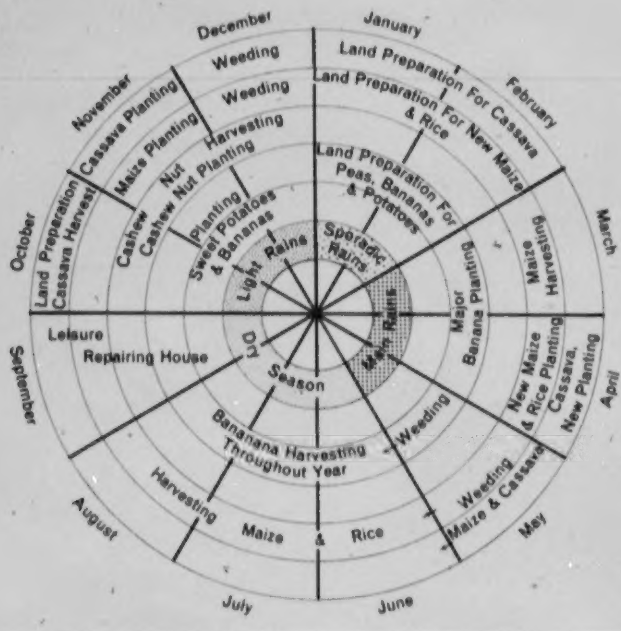

December
January
February
March
April
May
June
July
August
September
October
November
Weeding
Weeding
Land Preparation For Cassava
Land Preparation For New Maize & Rice
Land Preparation For Peas, Bananas & Potatoes
Sporadic Rains
Main Rains
Major Banana Planting
Maize Harvesting
New Maize & Rice Planting
Cassava, New Planting
Weeding
Weeding Maize & Cassava
Rice
&
Maize
Harvesting
Banana Harvesting Throughout Year
Dry Season
Leisure
Repairing House
Land Preparation Cassava Harvest
Cassava Planting
Maize Planting
Cashew Nut Harvesting
Cashew Nut Planting
Planting Sweet Potatoes & Bananas
Light Rains

Figure 2C.2: Seasonal activities on Saleho Ali's ***shamba.***

1. *How many planting seasons are there each year? When are they, and why?*
2. *The seasonal calendar indicates that rice is grown, but when the map in figure 2C.1 was drawn there was no land under rice. Suggest where on the* ***shamba*** *rice might be grown, giving the reason for your decision.*
3. *Suggest two reasons why house repairing is carried on in September.*
4. *When is the food supply likely to be plentiful? When might it be scarce?*

Observe the activities shown in the rural scenes of figures 2C.3–2C.11. What methods are used? What can you notice about the division of labour?

Figure 2C.4: Harvesting rice

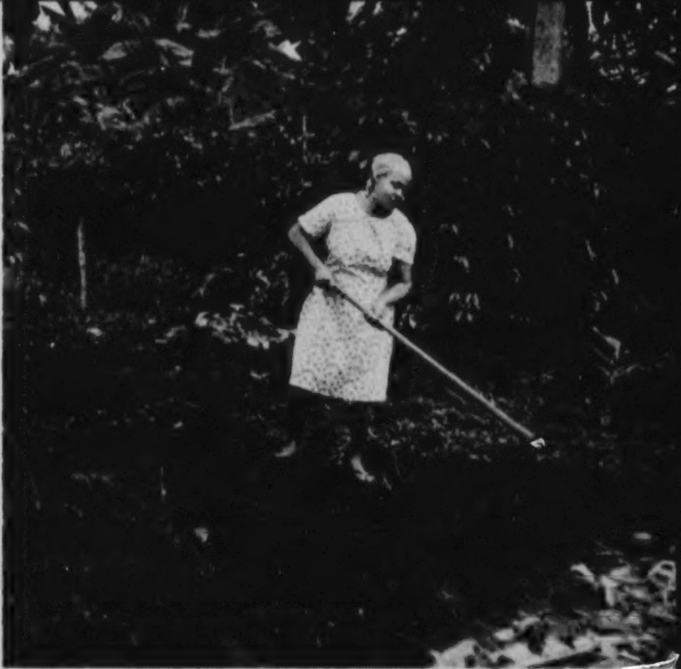


Figure 2C.3: Hoeing on a ***shamba***

Figure 2C.5: Winnowing sorghum

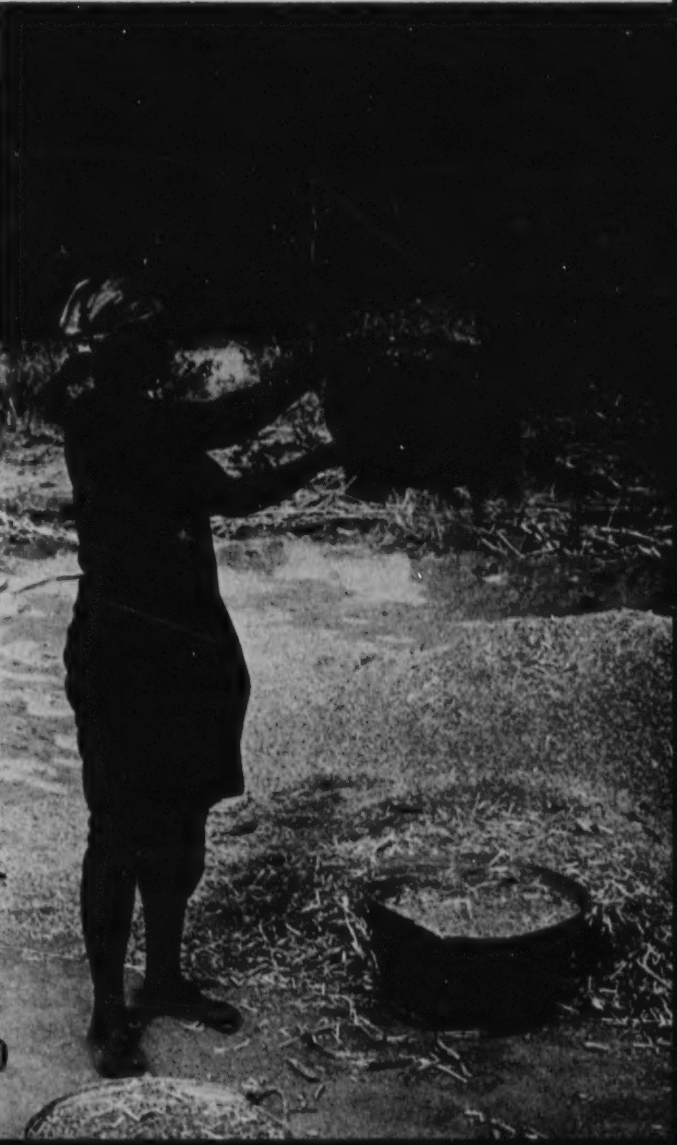


Figure 2C.6: Pounding maize

Figure 2C.7: Pounding cassava

Figure 2C.8: A grain cooperative

Figure 2C.9: Head-loading grass for cattle

Figure 2C.10: Getting water from a waterhole

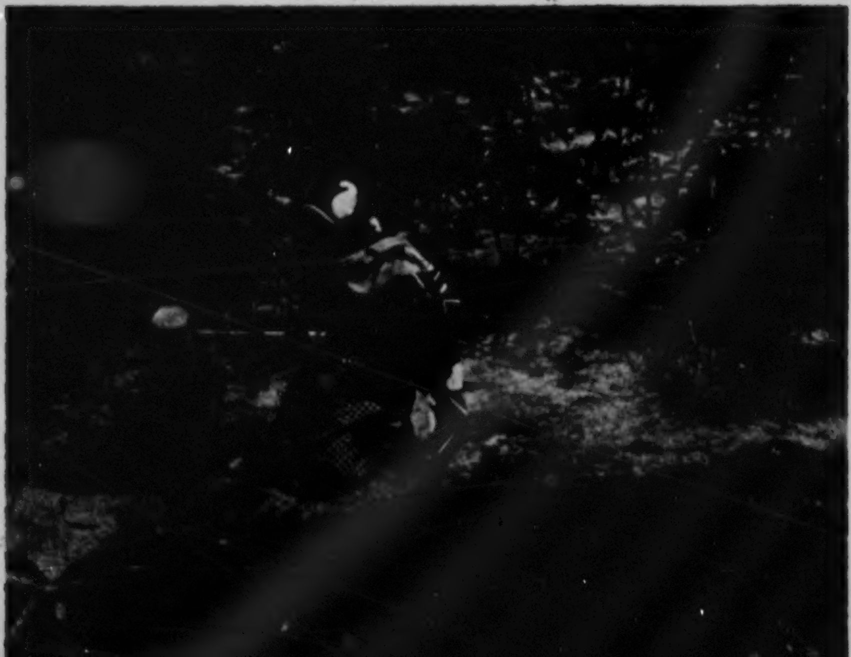


Figure 2C.11: House-building

A VISIT TO MY HOME

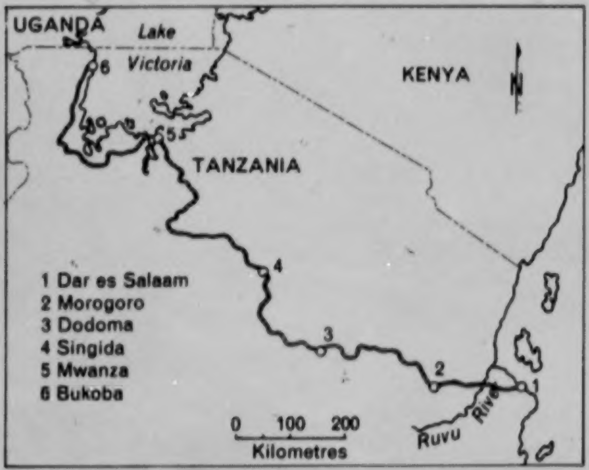
The following passage was written by Arcard Mushumbusi, an eighteen-year-old Tanzanian who is in Form 3 at Azania Secondary School in Dar es Salaam. He was asked to write a description of his visit home for a geography book for Australian pupils. Secondary schooling is carried on in English, and the description has not been changed from the boy's own wording.

Figure 2C.12: Arcard Mushumbusi

In the far north-west of Tanzania, near where Tanzania joins Uganda, lies the town of Bukoba. It is in West Lake Region where the Haya people live, I being one of those people. After two years' secondary schooling I was going home for the holidays to see my family in Bukoba.

For me the bus journey was quite an adventure. It began on *Friday, 4 June,* at 8 a.m. There were crowds of people at the bus station, but most were of my own tribe. One thing which joined all those people was Swahili, which is the national language; we all speak it as well as our tribal language.

Figure 2C.13: Route map of Arcard's bus journey



The packings of the passengers were loaded on to the bus roof. Not a very interesting load—mainly suitcases and baskets; often there are beds, chairs, sacks of flour, sugar, bunches of bananas and chickens.

Beside me sat a pretty girl who was going as far as Dodoma. I started to get impatient about my safari. At 10 a.m. the engine started. The sun was shining, the sky blue. Our speed increased as we got out of the city. Now everywhere is green, grass by the roadside is about a metre high. There are gangs of men cutting it with pangas (curved knives). At intervals there are bags of charcoal waiting to be picked up to be taken to Dar. Cassava and maize are growing in the shambas, and near the houses pawpaw and banana trees. From pictures I have seen of other countries, a visitor to our country from another continent may find the countryside strange, because nothing divides one shamba from another, crops are grown together, and bushland and shamba cultivation are mixed.

We pass a market by the roadside. I can see mangoes, coconuts, pineapples, oranges and bananas. There are women walking along the roadside with pails of water on their head or sometimes a load of firewood. Their kangas* are bright orange, green, blue or yellow. Sometimes they have a baby tied on their back. Two bus loads of Chinese pass; I suppose workers on the Tan-Zam railway. Suddenly, for a short space, the country has changed. There is a stretch of rice and some small thatch shelters. The bus crosses the bridge over the Ruvu River. The rice disappears and there are large stretches of thick bush and savanna woodland.

At 1 p.m. we reach Morogoro, having travelled about 190 km. The land changes again; we are getting higher. Most of the area is cultivated and I can see great farms of sisal, sugar cane and sunflowers. I and my companion have an interesting conversation on sunflowers. What is the use of sunflowers? The seeds are mainly used for making vegetable oil. As we started climbing the mountains we crossed a lot of bridges. Each time I thought one was the last there followed another. This went on until I came to a total of eleven bridges. To me this was remarkable.

When we got out of the mountains the land was dry. It looked as if it had had no rain for ages. How is it that the other side of the mountains where it was green got the rain, while this side was dry? Is there any geographical factor connected with that situation? This was the question I kept in my mind.

The next main town where we would stop was Dodoma. The land is brown and dry. Little grows in this thirsty land besides short grass patches and big baobab trees. The Wagogo people as well as their cattle live in this dry land. They use some of their land by cultivating millet and cassava, which do not need as much water as other crops.

---

* A *kanga* is a large piece of material which women wrap around their body, instead of wearing a frock.

Figure 2C.14: Vegetation on a typical shamba

Figure 2C.15: Produce drying on a hut roof in Dodoma Region (note baobab trees in background). See also figure 2A.6 on page 15

I was interested to see the Wagogo houses, which are quite different from Haya houses. A Wagogo house is a low rectangular mud hut with a mud roof. It is surrounded by a fence of thicket to make a compound where cattle are kept at night. The clothes they put on are quite different, too. They just tie a sheet of cloth or skin over the shoulder, across the body to the legs.

At 10 p.m. we reached Dodoma—it was very cold. The only way to solve the problem was to cover myself with my jacket. My eyes were now unable to be observant enough. I can't actually tell what happened during the night, but I could feel the movement over the earth road. I wish it was daytime so I could see the features of the Rift Valley. The road passes through this valley before it gets to Singida. From book knowledge I understand that in the plains of the valley live some of the Masai people who wander about with their cattle. They have no permanent settlements and their houses are temporary ones—a round cup structure made from mud and dung. As their defence, they move with sharp-pointed spears and shield in their hands.

Saturday, 5 June

Morning, and we are south of Lake Victoria. Cotton, groundnuts, maize and a little cassava are growing. The afternoon comes and I am reminded of home. I can see shambas of bananas, coffee bushes, cassava and millet. Up to almost all of my eyesight is the green colour of the banana shamba. We are in West Lake Region. It isn't true that all is familiar. Ujamaa villages have been established, some small, some large.

9.50 p.m. Thanks to god my dreams had come true. Eventually I had got home to Bukoba. But how to get home from here? Should I walk home with my luggage on my head? All my friends would. I felt very exhausted. I had been given some money. Should I hire a taxi? Yes. That was my conclusion.

Is it funny that I have more than two homes? I could either go to my father's and stepmother's home about 90 km from Bukoba, to my mother who lives 9 km from the town, or to my grandmother who lives 11 km from the town. I used to live with my grandma. I have a feeling I understand my grandma more than I understand my own mother. Quite often we are brought up by our grandmother. Because I am tired and it is dark, I decide to go to my mother for the night. I knocked on the door. No reply. In a few minutes a familiar sound sprang out. It was my Mama. 'Who is it?' she called. 'It is your Arcard!' I reply in a big voice.

Sunday, 6 June

After I had my breakfast I felt much better. My mother took my suitcase and I had the bag in my hand. We set off on the 2 km walk to my grandmother's house. My grandmother was there. On Sundays she never goes to the shamba. She clasped me in her arms. I was offered the honour of hospitality. I was amazed and impressed after seeing that my grandma had moved into a new house. To me the original house I knew was more interesting than the new one. How? It was divided into four main parts. The first part was used as a kitchen where all things concerned with cooking went on. The second part was used as a sleeping room. I and my grandparents used to sleep in this room. The third part was used as a store where all implements were kept, and the fourth part was used as a fold for our goats and cows. [See figure 2C.16, page 26.]

Although my grandmother's house was new, as the days passed many of the things were familiar to me. The clay pots she used for cooking, the foods she prepared—the cooked bananas mixed with beans or nuts and sometimes meat or fish, the ugali made from maize flour and water, the cassava, and, for special occasions, rice. We sat on the ground for meals and used our hands. My grandmother has no implements for eating. Each morning except Sunday, she rises at 5.30 a.m. She makes the fire from firewood she has collected from the bush nearby and prepares breakfast. For me she prepares a special breakfast of coffee and cooked yams. At about 7 a.m. she goes to work in the shamba until 1 or 2 p.m., weeding and cultivating with a hoe the potatoes, cassava, coffee, bananas, pineapples, yams, groundnuts, beans and maize. The coffee is sold to the cooperative by my grandfather, but any surplus food crops my grandmother takes on her head to the local market to sell. With the money she gets she buys the things she needs from the duka (shop), such as paraffin for the lamps, matches, salt, soap, sugar and sometimes cigarettes. Twice a day she goes to the river to collect water, which she brings back in a pail on her head.

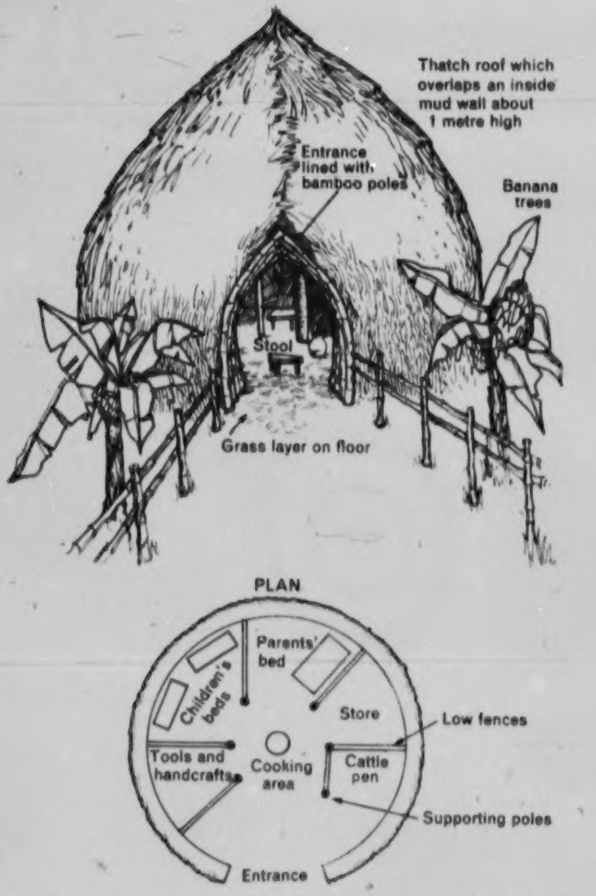

Thatch roof which overlaps an inside mud wall about 1 metre high
Entrance lined with bamboo poles
Banana trees
Stool
Grass layer on floor
PLAN
Parents' bed
Children's beds
Store
Low fences
Tools and handcrafts
Cooking area
Cattle pen
Supporting poles
Entrance

Figure 2C.16: Sketch and plan of a typical house of the Haya people of West Lake Region

Friday, 25 June

My holiday is over. As I journey back in the bus I reflect. Has my home changed? My grandmother has a new house, but the things she does are still the same. More things are grown and sold from the shambas, especially coffee, so my grandparents have more money to spend on things like cloth, paraffin, sugar and washing materials. But there are changes in the area. The tribal chiefs system has declined; some Ujamaa villages have been established where people work together, live together and share problems together. Many cooperative units have been set up, such as cooperative shops. There are new, more scientific ways of growing coffee and bananas, which has meant more production. The products are sold so that people can buy more things. The missionary schools and hospitals have been taken over by the government and as a matter of self-reliance the people have built new roads. The growing of tea has become more common and the population has increased.

On the journey back to Dar es Salaam I see the occasional tractor working the land, but I recall the words of our President, Nyerere, when he said that for us revolution will be when we replace women's labour by animal labour. Our land changes slowly.

Unit D: The changing landscape

Some of Tanzania's landscape has a very different appearance from the traditional farmland which we have been examining in the previous unit. At the end of last century, industrial countries in Europe wanted large, regular supplies of tropical products which they could not grow themselves; therefore, in countries such as Tanzania, they established their own huge farms known as plantations or estates.

As well as changing the appearance of the landscape, these farms also changed the way of life of a number of the people. Although in Tanzania the plantations were owned, financed and managed by foreigners, the workers came from within the country or from nearby countries. Instead of farming to grow their own food, the labourers worked for money, producing a crop that was to be exported.

In Tanzania, the most important plantation crop used to be sisal; now it is coffee. The information on the following pages is given to help you answer the following questions:

1. What are the differences between traditional African farming and the plantation farming introduced by foreigners?
2. Where have plantations changed the landscape? Why has this occurred in these areas?
3. What changes have the plantations made in the lives of African people who work on them, and in the lives of their families?

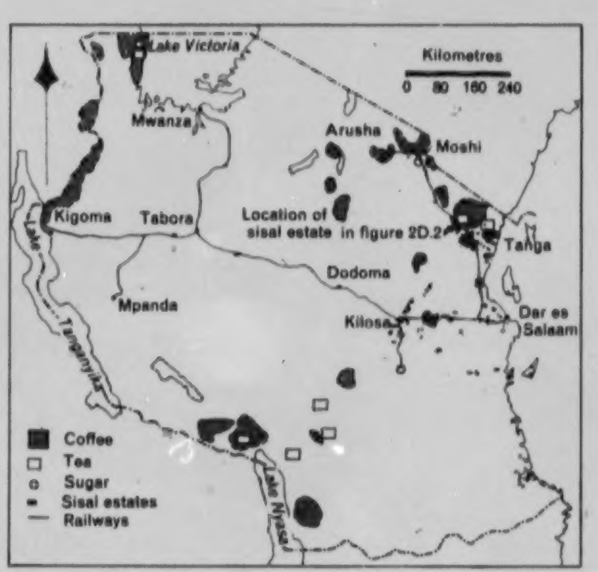

Lake Victoria
Kilometres
0 80 160 240
Mwanza
Arusha
Moshi
Kigoma
Tabora
Location of sisal estate in figure 2D.2
Tanga
Dodoma
Mpanda
Kilosa
Dar es Salaam
Lake Tanganyika
Lake Nyasa
Coffee
Tea
Sugar
Sisal estates
Railways

Figure 2D.1: Location of sisal estates and growing areas for coffee, tea and sugar in Tanzania

4. What benefits has plantation agriculture brought to the country? What are the problems or disadvantages?
5. Why is plantation agriculture declining in importance?
6. What are other methods of growing cash crops?

The sisal industry

In 1892, Dr Richard Hindorf, an agronomist of the German East Africa Company, was looking for a crop that would grow on the bushland and wooded grassland of the plains between Tanga and the Usambara Mountains in north-eastern Tanzania. He came across a reference to sisal plants, which were native to Mexico, and ordered some of them. Thus began what was to become the most important industry in Tanzania from the mid-1920s to 1967—one in which Tanzania still leads the world. But it was not a Tanzanian-owned industry. Greeks commanded about one-third of the production, British and Asians a quarter each, while Swiss and Dutch controlled about 6 per cent each.

Sisal can grow in poor soil; it is a *xerophytic* plant, able to withstand a light, not necessarily regular, rainfall.* Therefore, sisal estates could be set up on land which was generally unused before European occupation. Figure 2D.1 shows what appears to be the main factor determining the location of sisal estates. What is this factor, and why is it important in determining the location of the sisal estates?

To set up a sisal estate now would cost over half a million dollars. Estates vary in size, but most were between 1600 and 2000 hectares in area. The sisal plant is propagated from suckers or from bulbils, which are small bulbs found on the seed pole of a mature plant. The seed pole grows from the centre of the plant after about ten years, when the plant is ending its life cycle; the poles grow to a height of about 4 metres, and can just be seen in the background of the photograph of the sisal estate (figure 2D.2). They are also visible in figure 2D.5. Bulbils are grown in a nursery for a year, and are then transplanted. Cultivation of the fields is generally carried out mechanically, but planting, transplanting, hoeing, weeding, desuckering and cutting all depend on hand labour. An average estate employs about 1500 labourers.

As only 2·5–5 per cent of the leaf consists of fibre, which is the desired end product, sisal is generally processed on the estate. The cut bundles of leaves are taken on narrow-gauge railway lines or roads to the estate processing plant, where the leaves are fed into a decorticating machine. Here they are sprayed with water and beaten to break up the fleshy part of the leaf, which is washed away; this leaves long, white fibres which are laid out on racks to dry and bleach in the sun. An average estate requires a minimum of 18 000 litres of water per hour to carry away the waste leaf pulp and wash the fibre. The fibre is then brushed and baled and taken to the nearest port for export. It is used to make rope, twine, sackcloth, bags, matting and other things requiring a strong fibre.

The photograph of the sisal estate in figure 2D.2 was taken in 1971. Study it carefully, and after reading this paragraph make a labelled sketch of the landscape. Note such things as the railway line and the power line. Can you suggest why the processing plant is at the bottom of the valley, rather than higher up the hill slope? What factors

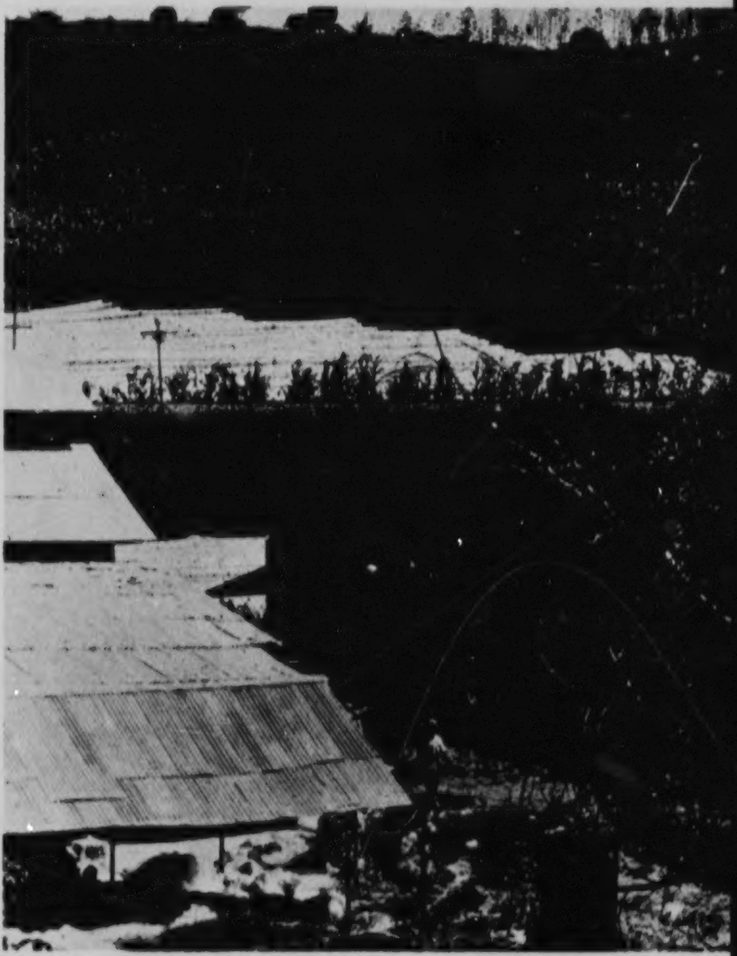


Figure 2D.2: A sisal estate—the approximate location of this estate can be seen from figure 2D.1

would have governed the siting of the plant? The crop in the middle ground, just beyond the drying racks, is maize; what two explanations could there be for this area of maize? (Information in table 2D.3 may help you answer the last three questions.)

---

* The annual rainfall in growing areas varies between 600 mm and 1250 mm

The statistics in tables 2D.1–2D.3 not only tell more about the sisal industry, but also reveal other aspects of Tanzania in general. For example:

What does the 'area of origin' of plantation workers tell about the possibility of getting a paid job in Tanzania, in comparison with the neighbouring countries of Mozambique, Rwanda and Burundi?

Wage earners often leave their families in their home villages when they go to work on plantations, and send money home. How widespread might the effect of the pattern evident in table 2D.2 be?

What effect would the developments shown in table 2D.3 have on the economy of the country?

What causes could there have been for the fall in price shown in table 2D.3?

In 1964, when prices were high, the production of sisal by small-holders (individuals growing a few hectares of sisal) was encouraged by the government. Sisal plants must be three years old before their leaves can be cut: what do you think has been the fate of these small-holders?

Table 2D.1: Area of origin of sisal workers on six estates in Tanga Region

Place	Percentage of total labour force
Mozambique	11·6
Tanga Region, Tanzania	20·9
Mbeya Region, Tanzania	6·7
Kigoma Region, Tanzania	9·7
Mtwara/Ruvuma Regions, Tanzania	24·0
Rwanda/Burundi	9·8
Others	17·3

Table 2D.2: Employment in the sisal industry

1952	142 000 (40 per cent of the wage earners of Tanzania)
1960	120 000
1969	38 000
1970	29 868

Table 2D.3: Export proceeds from sical, and price received by the producer

Sisal exports	1962	1964	1965	1966	1967	1968	1969
Value (million shillings*)	315	437	286	235	201	159	169
Volume ('000 tonnes)	220	209	210	196	201	186	168

Price received by the producer: 1964—£85 sterling per tonne
1968—£38 sterling per tonne

*9·77 Tanzanian shillings = $1 Australian (1973)

The problem of the sisal industry is not how to expand, but how to reorganise production on an economic level. In 1967 a number of estates were nationalised, and production quotas were placed on all estates. The overseas price for sisal was stabilised at a level set by Brazilian producers, with the result that most Tanzanian sisal must be grown at a loss. Some sisal land has just been abandoned (see figure 2D.5). The Tanzanian government and the sisal industry are investigating alternative uses both for land under sisal and for the sisal itself. Can you suggest or find out what these alternatives are?

Figure 2D.3: Cutting sisal plants

Figure 2D.4: A cultivated sisal estate

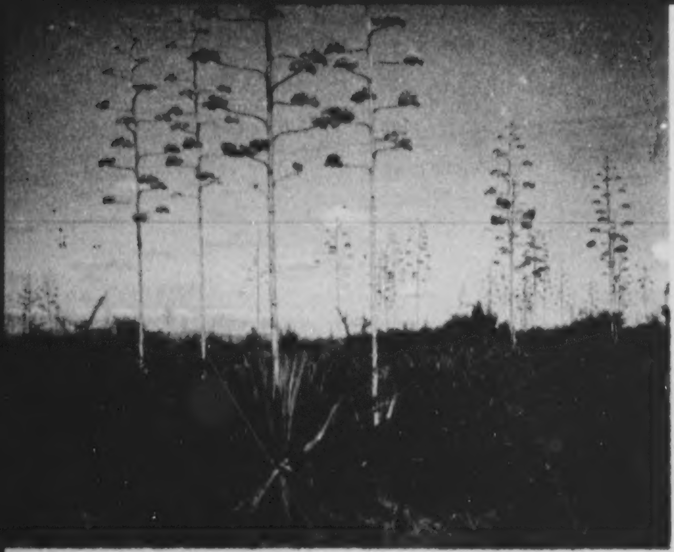


Figure 2D.5: Poled sisal on an abandoned estate

The coffee industry

Figure 2D.1 on page 26 shows the main coffee-growing areas of Tanzania. Though the International Coffee Agreement places controls on the amounts of coffee that may be grown by member countries, Tanzanian coffee growers have not suffered the problems of decline in price and demand that the sisal growers have had to face. The Kilimanjaro area, with its varied relief, higher rainfall and fertile volcanic soils, was very well suited to the introduction of coffee, particularly on the slopes between heights of 1200 and 1800 metres. However, African farmers were already well established in these areas, and so estate owners had to be content with lower, drier land. They used irrigation and scientific methods of farming to help overcome their problems.

The Africans living in Kilimanjaro Region belong to the Wachagga tribe. Sir Harry Johnston, who journeyed to Kilimanjaro in 1888, wrote of the Wachagga: '. . . they mostly excel in their husbandry. The skill with which they irrigate their terraced hillsides by tiny tunnels of water diverted from the main stream shows a considerable advancement in agriculture. Their time is constantly spent in tilling the soil, manuring it with ashes, raking it and hoeing it with wooden hoes.'

The Wachagga are a progressive people; when eventually they were encouraged to grow coffee in the 1920s, they realised they could not afford to invest money to fight pests and diseases as their European neighbours did. But if everybody contributed a small proportion of the money he received from his crop, then, through cooperation, Africans could do the same as Europeans. Thus coffee is grown on small-holdings as well as on the big estates.

The contrast in farming methods between estates and small-holdings is very marked. As you study the text, pictures and maps that follow (pages 29-35), note the basic differences between the two methods of cash farming. It is probable that by the mid-1970s the European estates will have been nationalised; decide whether you think it would be wiser for the government to retain the large-scale farming of the estates, or to divide the estates into small-holdings.

Table 2D.4: Comparison between coffee estates and small-holdings

(The information in this table was supplied by the manager of a coffee estate and the owner of a small-holding. The details are fairly typical of each type of coffee growing.)

	COFFEE ESTATE	COFFEE SMALL-HOLDING
LOCATION	Weru Weru, Kilimanjaro Region	Near Machame, on the slopes of Mount Kilimanjaro
OWNERSHIP	Dutch company	1 African family
AMOUNT OF LAND	425 hectares	1·2 hectares
BUILDINGS: Number	52	3
Functions	Staff houses, accommodation for seasonal workers ('labour lines'), offices, factory workshops, pump house	House for sleeping; kitchen; cattle shed
EQUIPMENT	6 tractors, 4 cultivators, 2 sprayers; 2 forage harvesters, 3 trailers, 2 pulpers for processing coffee; hoes, bushknives, pruning shears, ordinary farm implements; 2 five-tonne trucks	3 *jembes* (hoes), 3 forks, 2 pangas, 1 sickle

(cont.)

	COFFEE ESTATE	COFFEE SMALL-HOLDING
LABOUR	Permanent workers — 82 males, including manager (European), field assistant, 5 drivers, 2 mechanics, 2 clerical workers. Seasonal workers—300 to 500 per day during picking (100–200 male and 300 female). Permanent workers who wish to live in camp are provided with free accommodation. Employees work 45 hours a week, and are provided with free medical attention	Family—at picking time neighbours sometimes help or a paid labourer is brought in
ORGANISATION OF WORK	The manager allocates work and issues instructions to the field assistant. The work is then supervised by headmen under the field assistant	All the family left at home work in the *shamba*. Some jobs are always done by women—cleaning out the cattle shed; collecting grass for animals; manuring and weeding the coffee plot. Men do the pruning of the coffee trees
LAND USE	166 hectares under coffee (1630 plants per hectare). The balance of the land is used for mulch grass (planted with Rhodes grass, velvet sorghum and elephant grass)	1 hectare of coffee, interplanted with bananas; 0·1 hectare of cabbages, carrots, yams, sweet potatoes, beans, maize; 0·1 hectare of grass in front of house (this is unusual; fodder for cattle is generally collected by hand from the roadside or higher slopes and head-loaded to the animals); area of maize on the lowlands
ANIMALS	Nil	2 cows, 2 goats, 1 sheep, 10 hens
YIELD PER HECTARE	2963 kg	Coffee—approximately 1750 kg Bananas—305 bunches
FARMING ACTIVITIES	*Seasonal Calendar* Jan.: Mechanical and hand weeding; spraying with fungicides; overhead irrigation using electric-driven pumps Feb.: As above March: As above, plus beginning to pick crop April: Application of fertiliser; spraying; weeding and picking; factory work. (No irrigation as rains should have started.) May: Weeding; picking; factory work June: As above July: As above, together with mulching; irrigation if the rains have stopped August: As in July Sept.: Picking normally finished; pruning starts; irrigation, mulching, weeding Oct.: As in September Nov.: As in September, plus application of fertiliser and spraying Dec.: Pruning, mulching, irrigation, weeding	Draw up your own work calendar for the small-holding. Note that, because of its altitude, the picking of the coffee begins at least one month later than on the estate. For the timing of other crops, the seasonal calendar of Salehe Ali's *shamba* (page 22) may help
PROCESSING PRODUCT	Coffee is picked by hand and brought by truck from the fields to the factory, where it is pulped, graded, fermented, dried and conditioned in bins, prior to being taken to the Coffee-curing Company mill for hulling	*Coffee* is picked, brought to a drying rack near the house, and when dry taken to the local cooperative *Bananas*—most are cooked, some are eaten raw and a third variety is turned into *pombe* (home brew); banana leaves and stalks are used for cattle feed, mulching, wrapping, thatching, and plates, and for covering food *Vegetables*—home consumption
MARKETING	After hulling at the curing company, coffee is marketed by the Coffee Board at auctions held once a week at Moshi	The coffee is taken in large sacks to the local cooperative; all small-holder coffee is marketed through the K.N.C.U. (Kilimanjaro Native Cooperative Union)
PROBLEMS	Rising costs and taxes; drop in coffee price; pests and diseases, particularly coffee-berry disease	Falling coffee prices; pests and diseases; land shortage

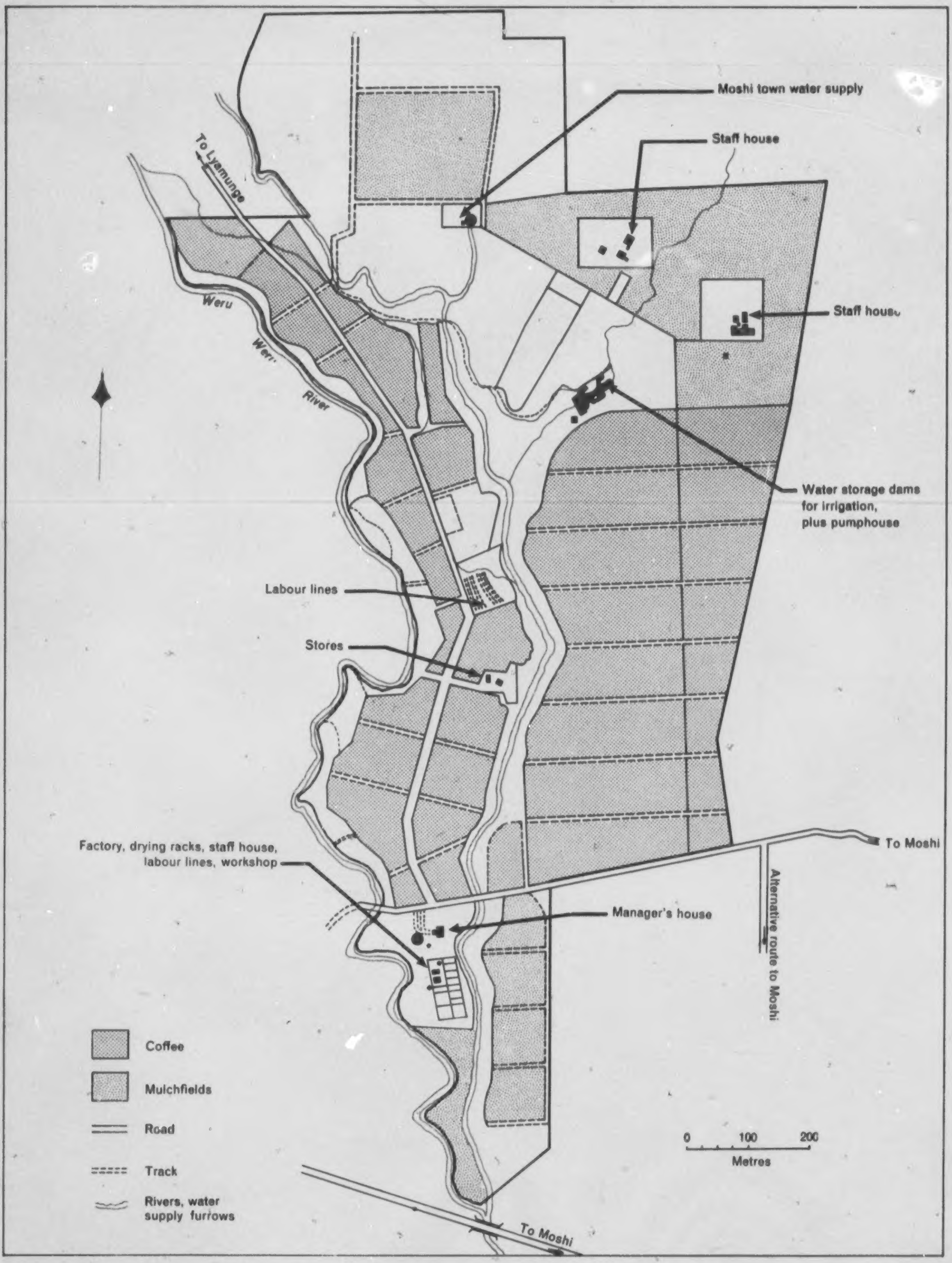
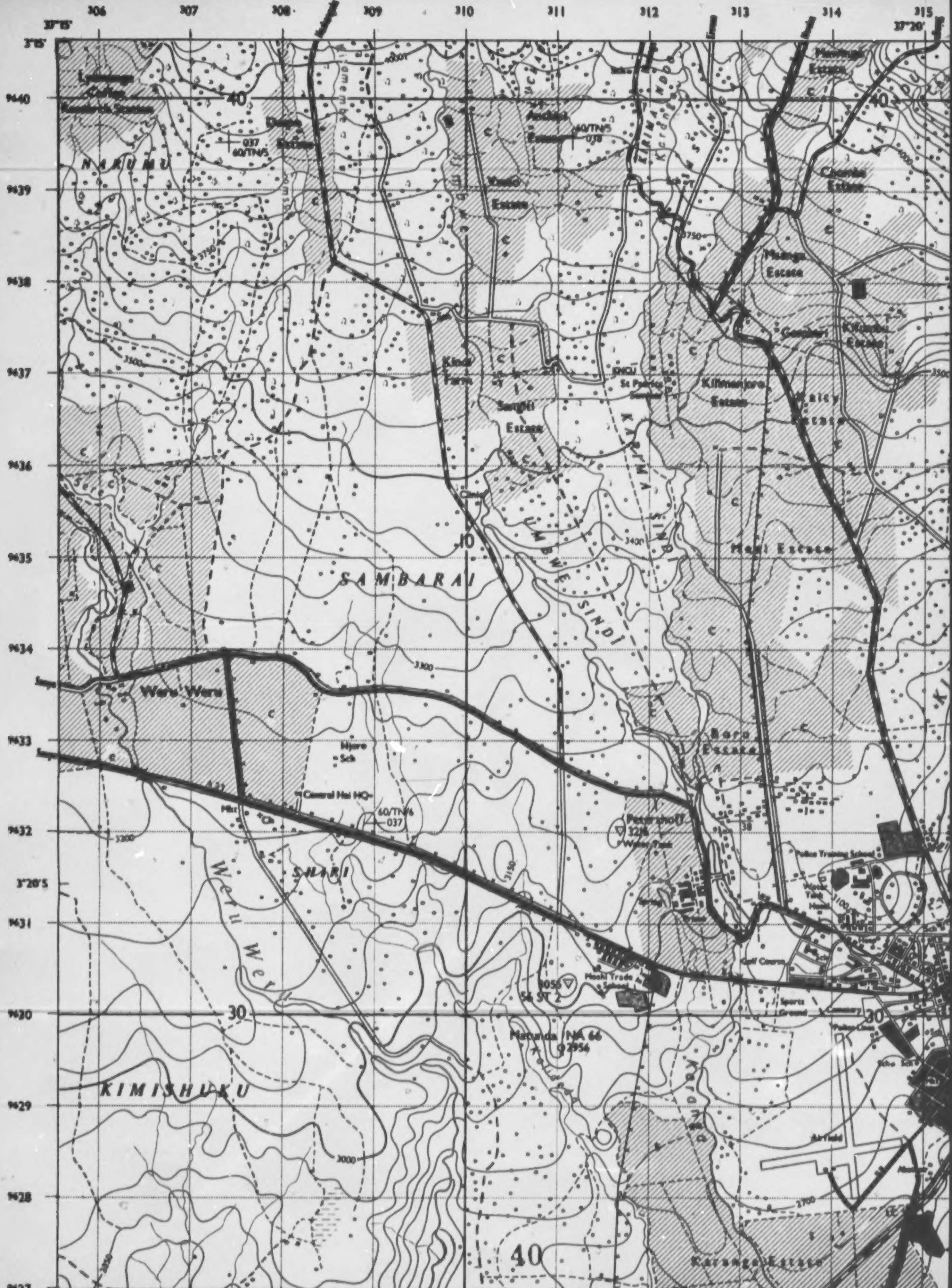
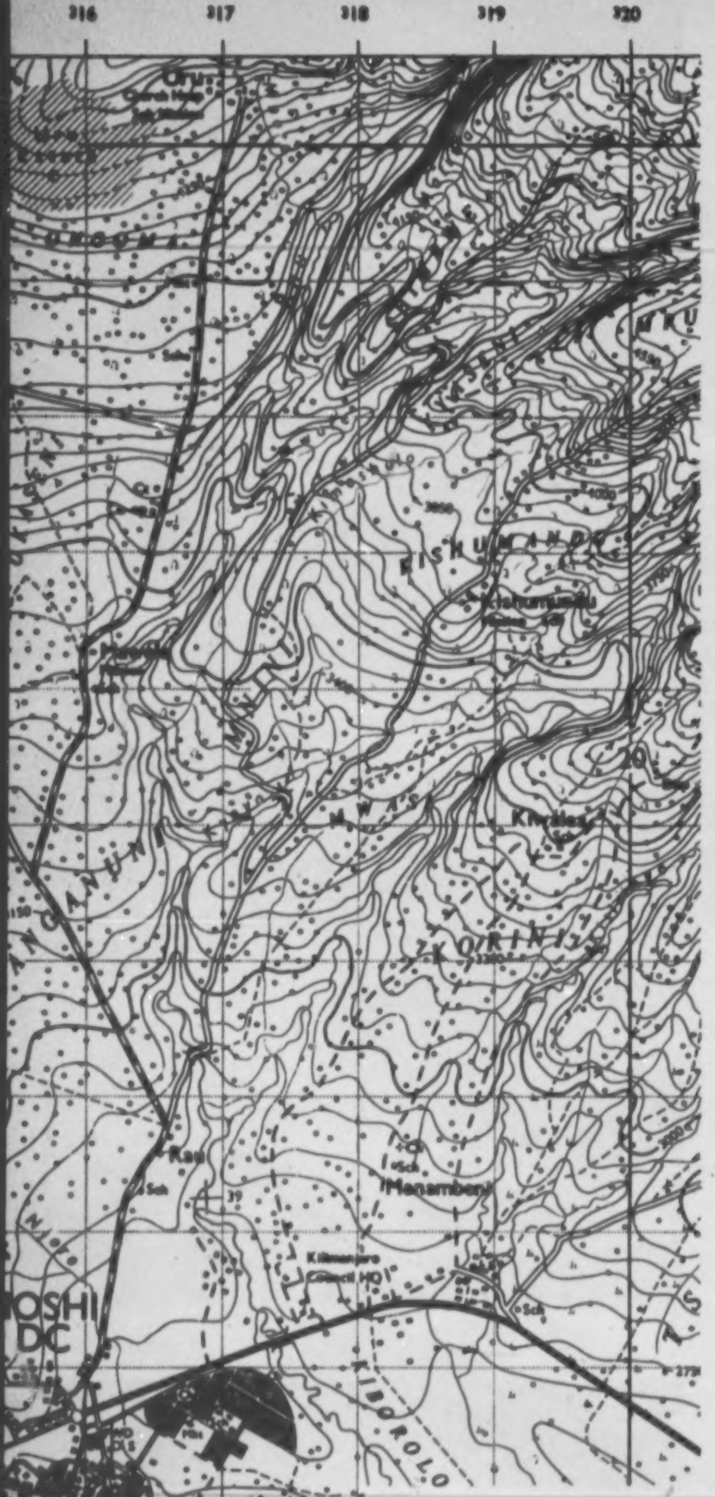

Moshi town water supply
Staff house
Staff house
To Lyamunge
Weru
Weru
River
Water storage dams
for irrigation,
plus pumphouse
Labour lines
Stores
Factory, drying racks, staff house,
labour lines, workshop
Manager's house
To Moshi
Alternative route to Moshi
To Moshi
Coffee
Mulchfields
Road
Track
Rivers, water
supply furrows
0
100
200
Metres

Figure 2D.6: Map of the coffee estate described in table 2D.4.

1. *Comment on the positioning of the main 'labour lines' in relation to the coffee-growing areas.*
2. *Comment on the positioning of the manager's house, the factory and the workshop in relation to the roads.*
3. *Work out the length of the estate, and its width at the widest point, by reference to the scale. The total area of the estate is 425 hectares.*


306
307
308
309
310
311
312
313
314
315
37°15'
37°20'
3°15'
9640
9639
9638
9637
9636
9635
9634
9633
9632
3°20'S
9631
9630
9629
9628
Lyamungo Coffee Research Station
NARUMU
Dungu Estate
Anchiki Estate
Yasio Estate
Mwanga Estate
Chemka Estate
Kilimanjaro Estate
Kiruri Farm
Sanghi Estate
Wasi Estate
Boro Estate
Kilombo Estate
Karanga Estate
SAMBARAI
Weru Weru
SHARI
KIMISHUKU
KARIMA SINDI
UMBWE SINDI
KARANGA
Weru Weru
Njoro Sch
Central Hai HQ
60/TN/5
037
60/TN/6
037
Petershoff 3216
Water Tank
Moshi Trade School
3055
SA ST 2
Matunda NA 66
2956
Police Training School
Golf Course
Sports Ground
Police Lines
Air Field
40
30
10
40
3750
3500
3400
3300
3200
3150
3000
2700
c


316
317
318
319
320
UMBOMA
KISHUMUNDU
Kishumundu
MWASI
Kiruilea
KORINI
3800
3250
Rau
Sch
Mananbeni
Kilimanjaro Council HQ
Sch
MOSHI
DC
KIBOROLO

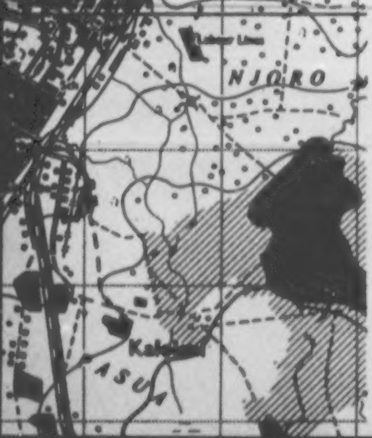
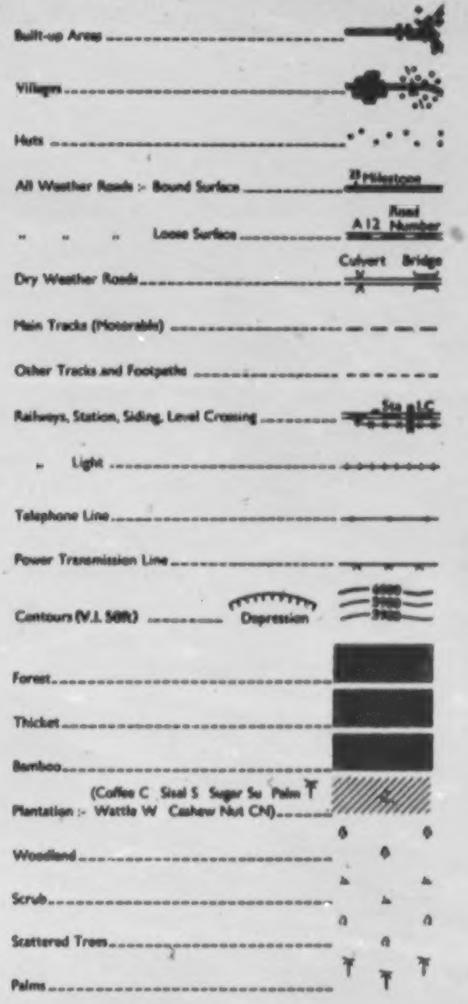

NJORO
Labour Lines

*Figure 2D.7: Extract from topographic map sheet—Moshi, 1:50 000, 1964 (**Surveys and Mapping Division, Ministry of Lands, Housing and Urban Development, Dar es Salaam**).*

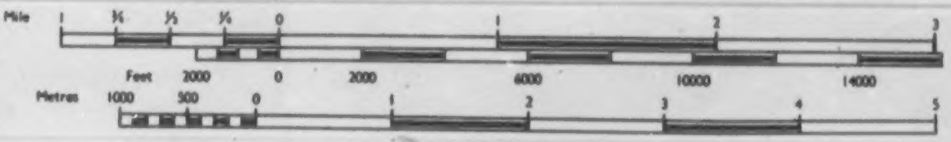
1. *By comparison with figure 2D.6 on the preceding page, locate the exact position of the coffee estate on the topographic map.*
2. *Work out the distance, by road, from the main settlement on the estate to the railway siding at Moshi.*
3. *Describe the area of the map extract which has the densest rural settlement. Why should this be so?*
4. *Why is Moshi well placed for the sale of coffee from both estates and small-holdings?*
5. *Examine the map carefully and list all the features indicating that expatriates have lived in the area.*


Built-up Areas
Villages
Huts
All Weather Roads :- Bound Surface
23 Milestone
" " " Loose Surface
A 12 Road Number
Dry Weather Roads
Culvert
Bridge
Main Tracks (Motorable)
Other Tracks and Footpaths
Railways, Station, Siding, Level Crossing
Sta
LC
" Light
Telephone Line
Power Transmission Line
Contours (V.I. 50ft)
Depression
Forest
Thicket
Bamboo
(Coffee C Sisal S Sugar Su Palm
Plantation :- Wattle W Cashew Nut CN)
Woodland
Scrub
Scattered Trees
Palms

SCALE 1:50,000

1 inch to approximately 0·8 miles

1 Mile to approximately 1·27 inches


Mile
1
¾
½
¼
0
1
2
3
Feet
2000
0
2000
6000
10000
14000
Metres
1000
500
0
1
2
3
4
5

ABBREVIATIONS

AC	Area Commissioner
Ch	Church
CHQ	County Headquarters
Ct Ho	Court House
DC	District Commissioner
DHQ	Division Headquarters
Disp	Dispensary
FR	Forest Reserve
Hosp	Hospital
LGHQ	Local Government Headquarters
LHQ	Location Headquarters
Mkt	Market
MoW	Ministry of Works
PO	Post Office
PP	Police Post
PS	Police Station
PWD	Public Works Division
RC	Regional Commissioner
RH	Rest House
Sch	School
SCHQ	Sub-County Headquarters
T	Telephone
Tg	Telegraph
TC	Trading Centre
KNCU	Kilimanjaro Native Co-operative Union

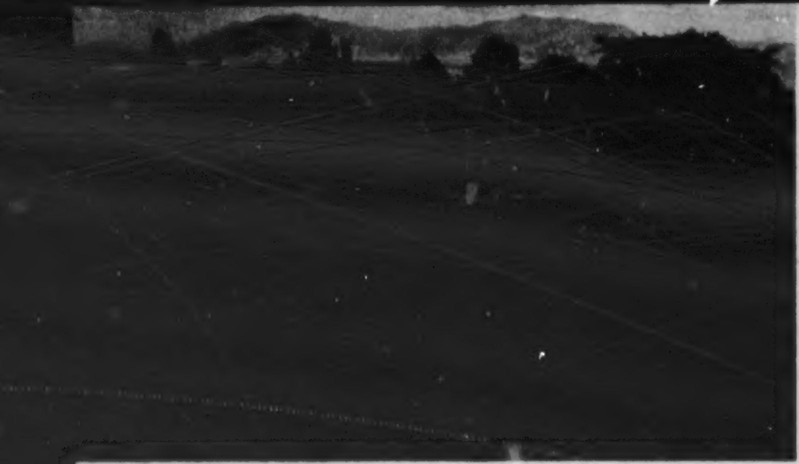


Figure 2D.8

Figures 2D.8–2D.14 were taken in Kilimanjaro Region. After you have studied table 2D.4 on pages 29–30, try to identify the content of each photograph, and state whether it was taken on a coffee estate or on a small-holding.

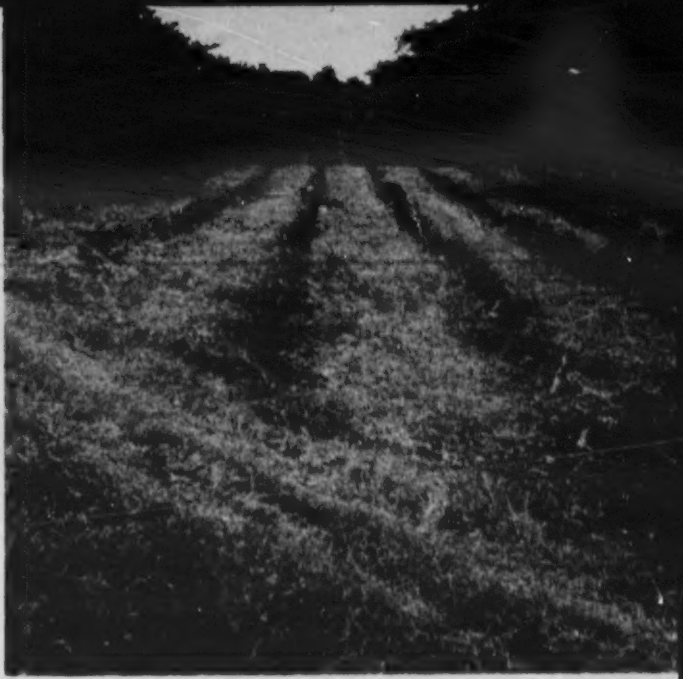


Figure 2D.9

Figure 2D.10

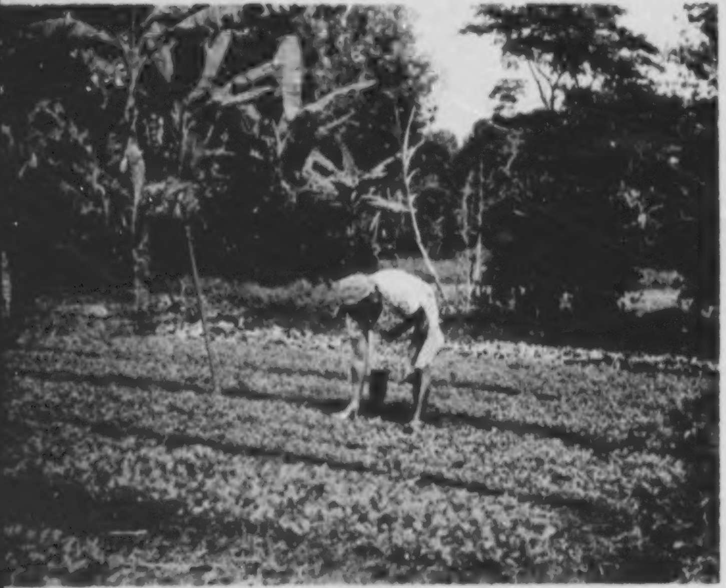


Figure 2D.11

Figure 2D.12

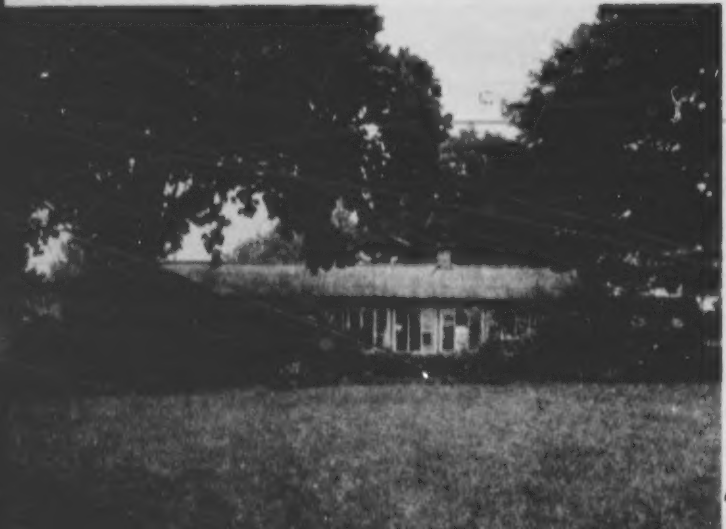


Figure 2D.13

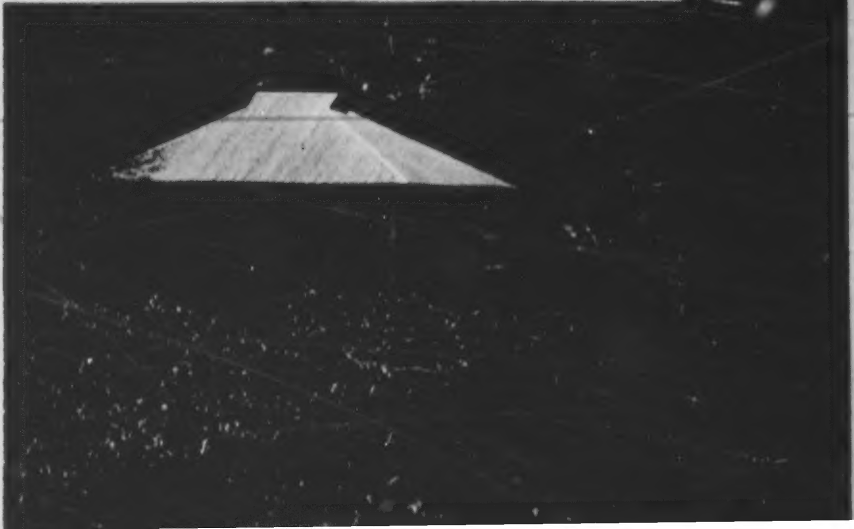


Figure 2D.14

FURTHER ACTIVITY

Do people move towards or from particular places? Is there a pattern in the movement of people? Your whole class should be involved in examining these questions. How many of them have changed where they live over

the last three years?
the last six years?
the last nine years?
the last twelve years?

How many have moved more than once in the last twelve years? Make a map of where all the students now live. Plot also where the students who have moved used to live (and, if they have moved more than once, all the other places). Draw lines to join the present and past homes of each student. Is there any pattern? Can you think of any reasons for any pattern? Why would these moves have occurred?

Unit E: Development of an urban landscape

In Australia, about 85 per cent of people live in urban areas, and most of us therefore know a great deal about city life. For the African, this is not so. Africa is the least urbanised of all continents; probably 90 per cent of the people still live in rural areas. However, change from rural to urban living is occurring in the lives of some people. In Tanzania, for example, the 1948 and 1967 censuses gave the following information:

Year	Urban Population	%	Rural Population	%
1948	197 300	2·6	7 383 100	97·4
1967	677 800	5·7	11 199 200	94·3

Will big cities spring up all over Africa and rapidly change life for large numbers of people, so that most Africans, like Australians, will be city dwellers? Will their cities be like ours? To even guess at an answer, we need to see what changes have already occurred, and why.

In this unit, the material is arranged in three parts:

Part 1 poses a number of questions concerning change from rural to urban landscape. To help you to suggest answers, there is various material to be studied. The appropriate material is referred to in each question.

Part 2 is concerned with a particular city—Dar es Salaam. As well as finding out what factors have caused Dar es Salaam to change from rural to city landscape, you can also discover some of the typical features of an African city.

Part 3 gives the size and distribution of the largest cities in Africa. By translating the data given on to a sketch map, you can see which parts of Africa are most urbanised.

PART 1

1. *What is causing some small African villages to grow into towns?*

Read the following description of Thika, a town in Kenya. What are the factors that have helped change Thika from a small village to a flourishing industrial and commercial centre? Which of these factors are connected with natural conditions of local environment, which with activities of local Africans, and which with activities of expatriate people?

Description of Thika

Thika is 45 kilometres north-east of Nairobi on the eastern edge of the Kenyan Highlands. At the end of the nineteenth century it was a small African village, a resting place for travellers and an administrative 'boma' of the British colonial government. The local tribes—Kikuyu and Wakamba—traded here because it lay between their reserves, and a small market developed. Asian traders set up dukas (shops) to sell personal items to the Africans while bigger stores catered for European farmers from the surrounding coffee, sisal and pineapple plantations and purchase of fruit and vegetables grew steadily.

A wattle factory was attracted in 1932, followed by a leather tanning factory in 1942. By 1945 Thika had 2000 Africans, 2000 Asians and 100 Europeans. The improvement of road conditions, the low land costs, the government policy of decentralising industry, the good water supply in the nearby Thika River and the large number of local Africans seeking work helped attract more industry—a metal box factory (1952), a fruit and vegetable canning plant (1952), a paper mill (1958) and three textile mills (all after 1960). Many Africans came to work from Kikuyu and Kamba reserves and from Luo regions near Lake Victoria. New housing estates, training schools, a walled market were built. The old village was swept away for new improvements.

Thika's population is now 25 000; the African work force is over 5000, several of whom occupy important posts in British, Japanese and Asian owned firms. With a population growth rate of 12 per cent per annum, Thika may become part of the urban complex of Nairobi within the next 25 years.

J. M. Pritchard, *Africa: A Study Geography for Advanced Students* (London: Longman, 1969), p. 115

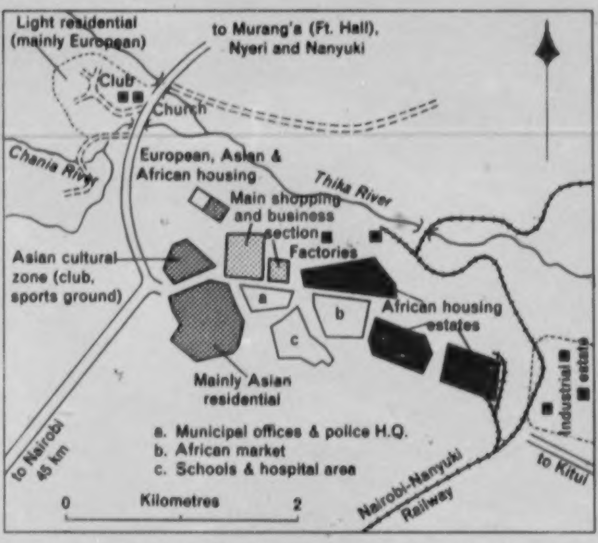

Light residential (mainly European)
to Murang'a (Ft. Hall), Nyeri and Nanyuki
Club
Church
Chania River
European, Asian & African housing
Thika River
Main shopping and business section
Factories
Asian cultural zone (club, sports ground)
a
b
c
African housing estates
Industrial estate
Mainly Asian residential
to Nairobi 45 km
a. Municipal offices & police H.Q.
b. African market
c. Schools & hospital area
0
Kilometres
2
Nairobi-Nanyuki Railway
to Kitui

*Figure 2E.1: Simplified diagram of the functional zones of Thika township in Kenya (**after Pritchard**)*

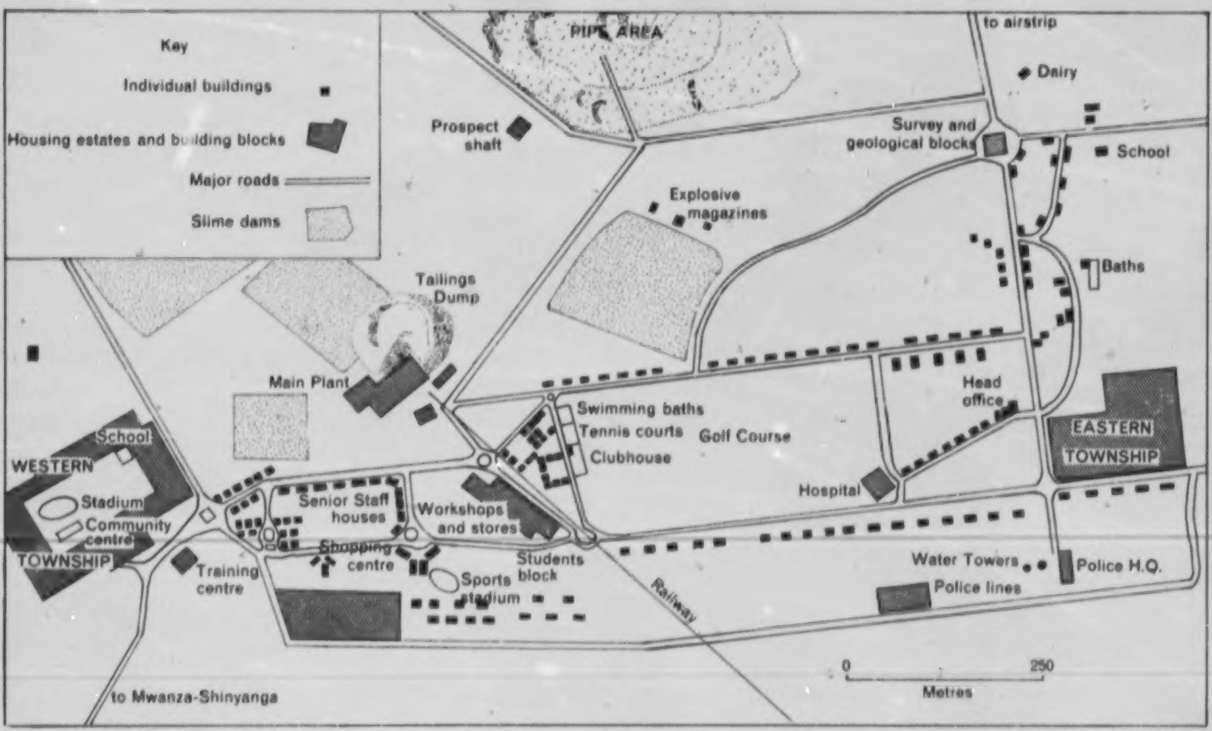

Key
Individual buildings
Housing estates and building blocks
Major roads
Slime dams
PIPE AREA
to airstrip
Dairy
Prospect shaft
Survey and geological blocks
School
Explosive magazines
Baths
Tailings Dump
Main Plant
Head office
Swimming baths
Tennis courts
Golf Course
Clubhouse
EASTERN TOWNSHIP
WESTERN
School
Stadium
Community centre
TOWNSHIP
Senior Staff houses
Workshops and stores
Hospital
Shopping centre
Students block
Training centre
Sports stadium
Water Towers
Police H.Q.
Police lines
Railway
0
250
Metres
to Mwanza-Shinyanga

*Figure 2E.2: The layout of Mwadui township (Williamson Diamond Mine) in Shinyanga Region of Tanzania (**after Pritchard**)*

Table 2E.1: Population growth and composition of the sixteen largest towns in Tanzania

Town	Population		Annual growth rate 1948–67 (%)	% migrants in total population	% migrants from same region as town	% migrants from other regions	% migrants from outside Tanzania
	1952 census	1967 census					
Dar es Salaam	99 140	272 821	7·5	67·5	23·9	35·2	8·4
Zanzibar	n.a.	68 490	2·2	84·7	69·7	9·6	5·4
Tanga	22 136	61 058	5·9	64·7	37·5	19·0	8·2
Mwanza	13 691	34 861	6·1	59·2	3·2	42·8	13·2
Arusha	6 308	32 452	10·0	70·0	12·8	46·0	11·2
Moshi	9 079	26 864	6·5	70·0	31·1	27·2	11·7
Morogoro	11 501	25 262	6·1	68·0	42·2	21·3	4·5
Dodoma	12 262	23 559	4·9	73·1	25·9	41·3	5·9
Iringa	8 013	21 746	7·3	60·1	35·3	20·7	4·1
Kigoma/Ujiji	n.a.	21 369	7·3	40·2	18·4	10·7	11·1
Tabora	14 031	21 012	2·7	59·6	23·4	28·0	8·2
Mtwara	8 074	20 413	2·7	61·5	44·0	10·5	7·0
Musoma	n.a.	15 412	9·1	72·7	40·9	18·0	13·8
Lindi	n.a.	13 352	2·4	68·7	54·4	9·8	4·5
Mbeya	5 566	12 479	7·5	68·4	33·0	25·8	9·6
Bukoba	3 570	8 141	5·0	70·9	40·0	16·5	14·4

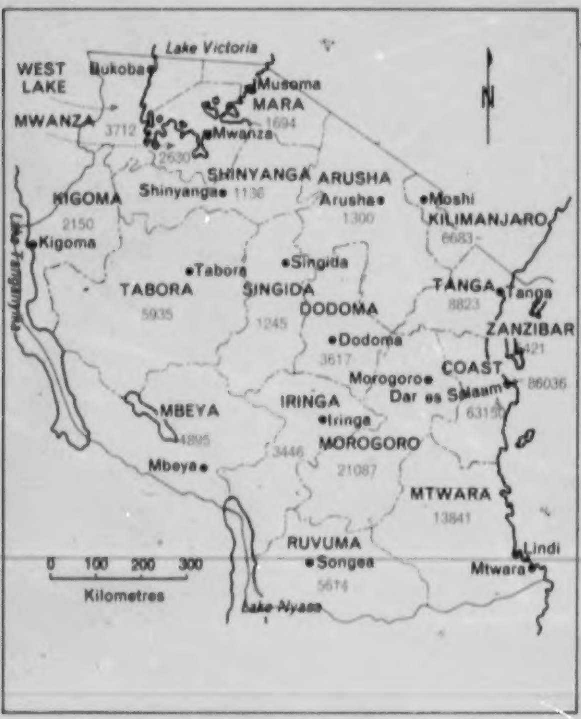

Lake Victoria
WEST LAKE
Bukoba
Musoma
MARA
1694
MWANZA
3712
Mwanza
2530
SHINYANGA
Shinyanga
1136
ARUSHA
Arusha
1300
Moshi
KILIMANJARO
6683
KIGOMA
2150
Kigoma
Lake Tanganyika
Tabora
TABORA
5935
Singida
SINGIDA
1245
DODOMA
Dodoma
3617
TANGA
8823
Tanga
ZANZIBAR
421
COAST
Morogoro
Dar es Salaam
86036
63150
MBEYA
4895
IRINGA
Iringa
3446
MOROGORO
21087
Mbeya
MTWARA
13841
RUVUMA
Songea
5614
Lindi
Mtwara
Lake Nyasa
0 100 200 300
Kilometres
N

Figure 2E.3: Population of Dar es Salaam, by region of birth, 1967 census (total 242 412—excludes non-Tanzanian born residents)

2. *Does landscape ever change from rural to urban without starting as a village and undergoing gradual growth?*

Study the plan of Mwadui (figure 2E.2); compare this with the plan of Thika (figure 2E.1). What things suggest that Mwadui's growth was not similar to that of Thika? What evidence is there that expatriates have been very much involved in developing Mwadui?

3. In the past, change from village to town was gradual as various factors played their part. With the establishment of industry, change is speeded up. In the case of Thika, *what types of industry appear to have been first established? Why?* (See the previous description of Thika.)

4. *How fast are towns growing?* (Table 2E.1)

Study the populations and growth rates of the sixteen largest towns in Tanzania.

What was the average annual growth rate of the towns from 1948 to 1967? If Dar es Salaam has continued to grow at its 1948–67 rate, what would its current population be?

5. *Where do the people living in towns come from?* (Table 2E.1, figures 2E.3 and 2E.4)

The locations of the sixteen largest towns in Tanzania are shown in figure 2E.3. Looking at all the data provided, can you make any generali-

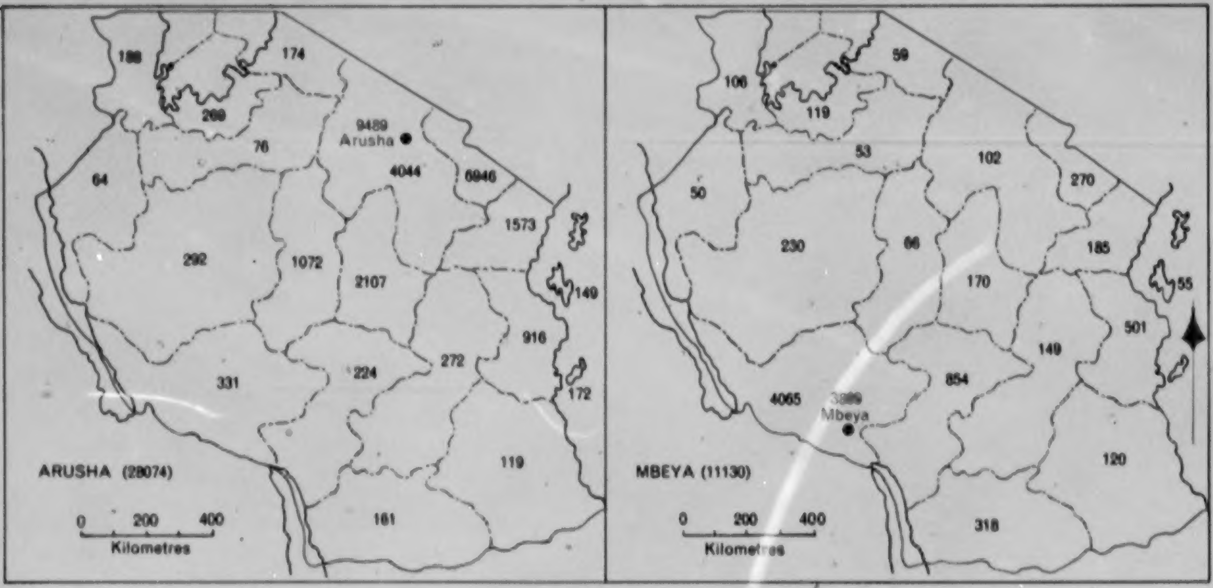


Figure 2E.4: Populations of Arusha and Mbeya, by region of birth, 1967 census (excluding non–Tanzanian born residents)

Table 2E.2: Age distribution of the population of the sixteen towns, according to birthplace (1967 census)

Place of birth	Sex	Age grouping								
		0–4	5–9	10–14	15–19	20–34	35–49	50–64	65+	All
In the town (%)	Male	15·3	7·8	6·3	4·8	8·6	4·5	1·7	0·8	49·8
	Female	15·1	7·8	6·1	4·6	9·9	4·1	1·7	0·9	50·2
Not in the town (%)	Male	3·2	2·8	2·3	4·2	20·3	13·9	6·2	2·7	56·0
	Female	3·2	3·2	3·1	4·1	16·8	8·0	3·8	1·8	44·0

sations about where the people in these towns come from? Would you expect tribalism to be strengthened or weakened in towns?

6. *Why do people come to towns?* (Table 2E.2)

Compare the age groupings of those people born in the town with those of the migrants. What are the main differences? Which is the largest age group for migrants? Why?

From what you have learnt about rural life, what might be the 'push' factors (reasons why people want to leave the rural areas) and what might be the 'pull' factors (attractions of the towns) for migrants?

PART 2

In studying this part of the unit, the aim is to discover:

- factors which have influenced the change of landscape from rural to urban in Dar es Salaam;
- some of the features of a changing African city.

However, to answer the problem posed at the beginning of this whole unit—whether most Africans will become city dwellers, and whether their cities will be like Australian cities—you need finally to decide which of the features influencing change are probably peculiar to Dar es Salaam, and which may be generally applicable to many African cities.

Dar es Salaam

Before you read the description that begins on page 42, look carefully at the pictures and maps (figures 2E.5–2E.16) and see what you can discover for yourself about the features of Dar es Salaam. See, too, if you can suggest what factors and which groups of people may have influenced its development.

To help you pick out features in the aerial photograph and map (figures 2E.5 and 2E.6, pages 39-41), there are specific questions to be answered.

The photographs in figures 2E.7–2E.11 on page 44 depict

(a) different periods in Dar es Salaam's historical development (German, British and post-independence);

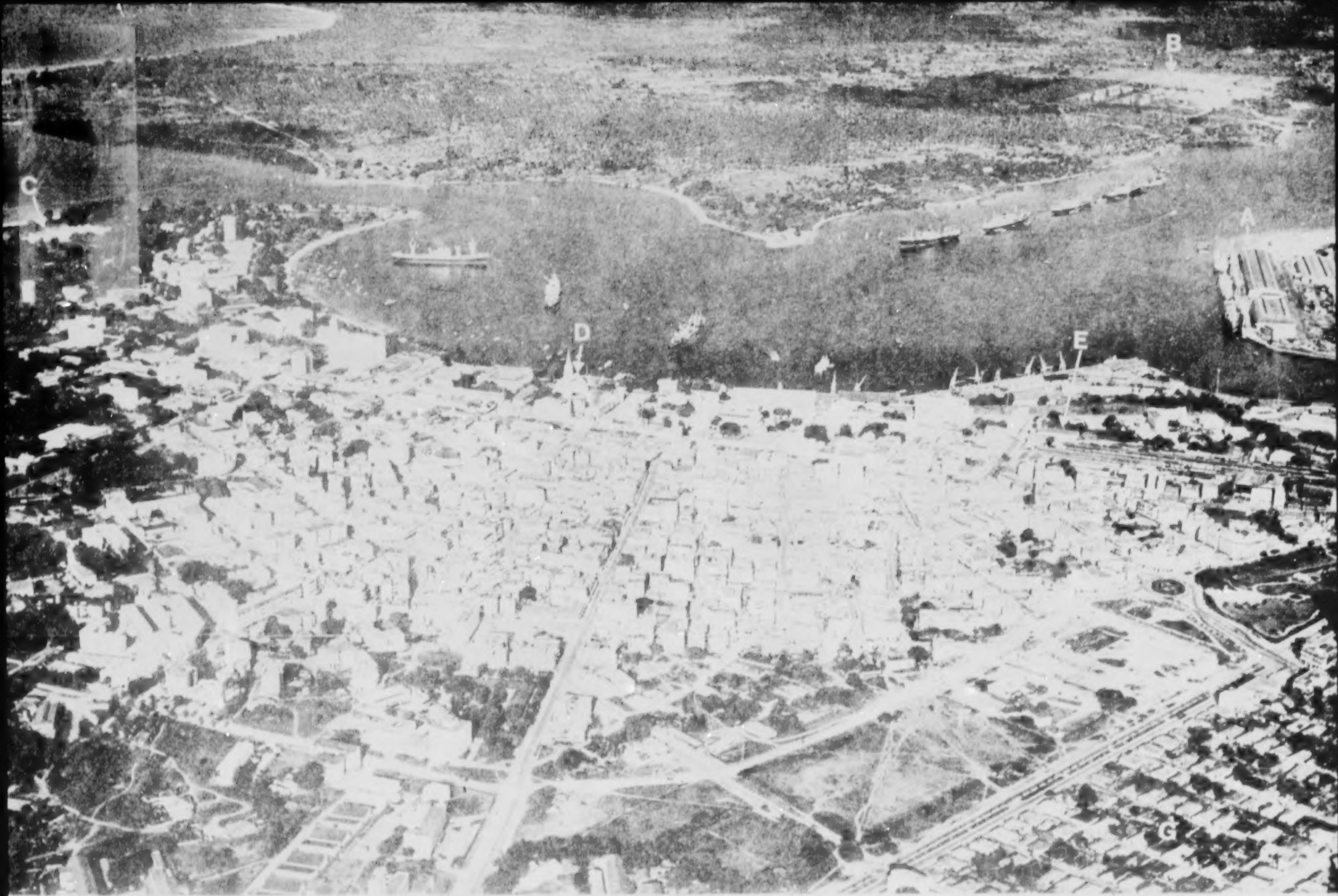
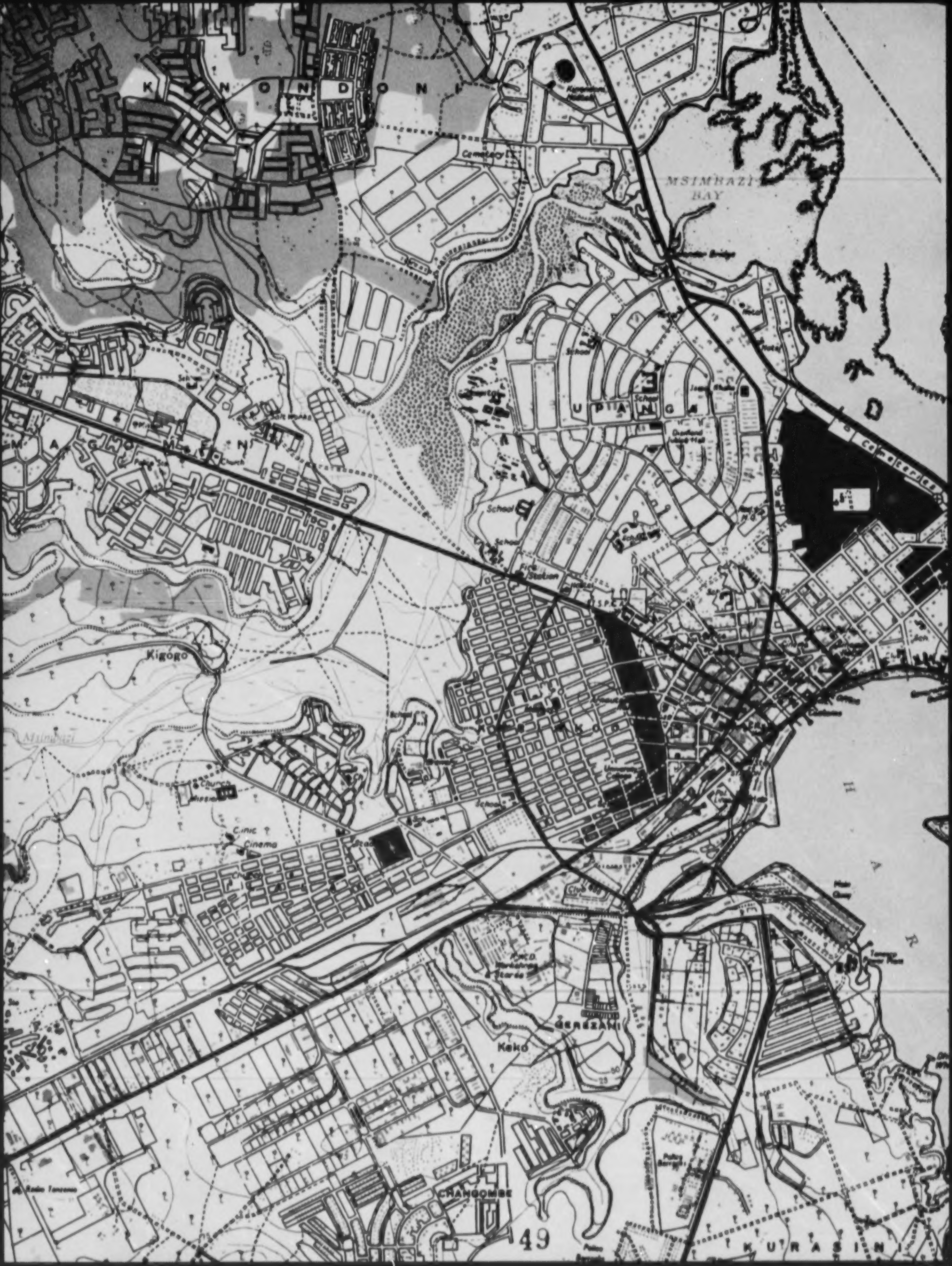


Figure 2E.5: Oblique aerial view of Dar es Salaam harbour


K I N O N D O N I
Cemetery
MSIMBAZI BAY
U P A N G A
School
M A G O M E N I
Fire Station
Kigogo
Msimbazi
Church
Clinic
Cinema
K A R I A K O O
Main Quay
H A R
P.W.D. Workshops Stores
GEREZANI
Keko
Police Barracks
Radio Tanzania
CHANGOMBE
49
K U R A S I N I

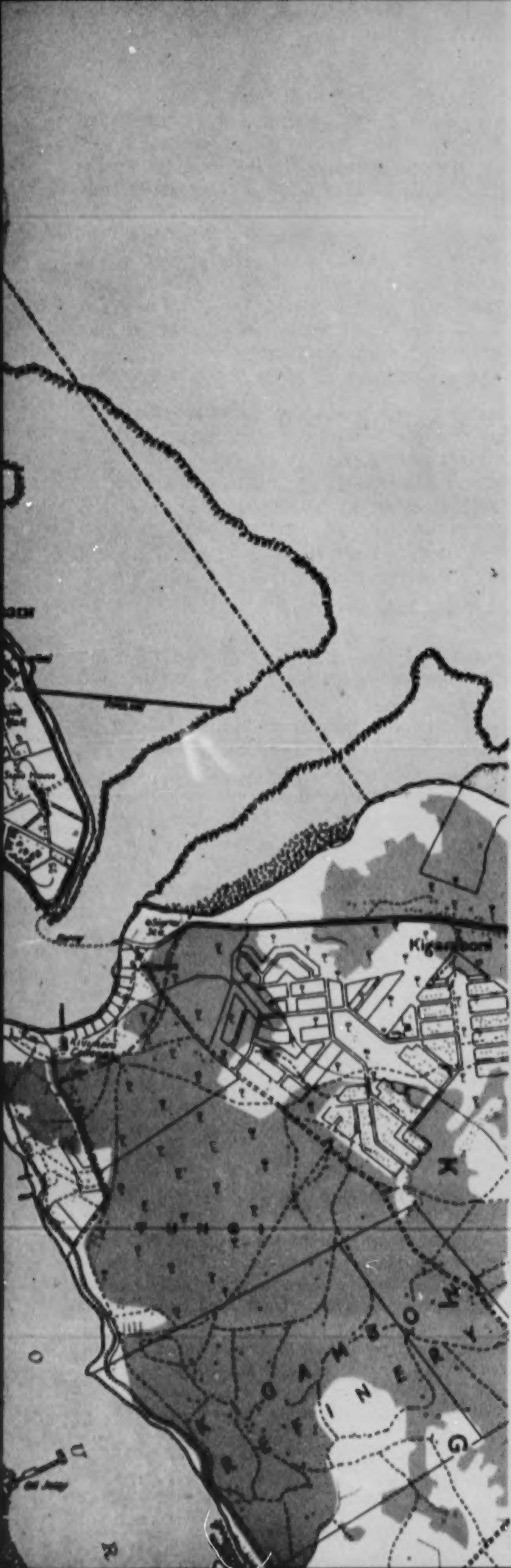
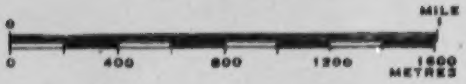

Kigamboni
REFINERY

Figure 2E.6: Extract from topographic map sheet—Dar es Salaam District, 1:25 000, fourth edition, 1966 ***(Surveys and Mapping Division, Ministry of Lands, Housing and Urban Development, Dar es Salaam)***

REFERENCE

Main roads	▬
Other roads	═
Motorable tracks	┅
Footpaths	┈
Railway and sidings	⟋
City Boundary	─·─
Open spaces	■
Contours V.I. 25Ft.	≋
Cultivation	▒
Sisal	▓
Coconuts	ᵀ ᵀ ᵀ
Dense Scrub	▨
Mangroves	▩
Cliffs, Sand, reefs	▧
Tidal or seasonal Swamp	

Scale 1 : 25,000


0
MILE
1
0
400
800
1200
1600
METRES

(b) different functional zones;
(c) African and what were basically Asian and expatriate areas.

Classify each photograph under the above headings.

The photographs in figures 2E.12–2E.16 on page 45 illustrate the text beginning on page 43. They were all taken within the city boundary, less than 10 kilometres from the centre of the city. Before reading the text, expand the caption for each photograph, explaining or commenting on what you see.

Questions on map extract and aerial photograph (figures 2E.5 and 2E.6)

1. Identify on the map the area of Dar es Salaam covered by the photograph. In what direction was the camera pointing to take the photograph?
2. Identify the places on the photograph shown by the letters A to G.
3. How do people get from one side of the harbour entrance to the other? How wide is the entrance?
4. Locate different types of wharves and jetties on the map. What kinds of ships visit Dar?
5. Locate, in the photograph, cranes other than at the main quay. Here the harbour is too shallow for ships to berth, so lighters go out to the ships to unload or load cargo. Look carefully at the ships. How many lighters can you see servicing ships in the main channel?
6. Locate on the map (a) State House, (b) two hospitals. Suggest reasons for their location.
7. What different kinds of service buildings are shown on the map?
8. Contrast the east and west sides of the big 'open space' shown in the foreground of the photograph.
9. Dar es Salaam is expanding rapidly. What area would appear to be a logical place for development? What might have to be built first? Why might a town planner not wish development to take place in such an area?
10. Write a description of Dar es Salaam harbour. Suggest its advantages and disadvantages as a harbour. (This is an important matter for Dar es Salaam, because her port facilities have been very heavily used. After the break in relations between Rhodesia and Zambia in 1965, Zambia decided to use Dar es Salaam as her access to the outside world for trade. An oil pipeline was opened in 1969 from Dar es Salaam to Lusaka. At present the Chinese are completing construction of a railway and the Americans are helping to build a roadway to link Zambia to the coast. All three means of transport focus on Dar.)

When you have made specific observations on all the photographs and the map, try to list some general statements on:

- the activities that go on in Dar es Salaam (the jobs that might be available for people, the services the city provides);
- the features of the city.

Description of Dar es Salaam

'Dar es Salaam' is popularly believed to mean 'Harbour (or Haven) of Peace'. You may be able to suggest why it was given this name. Before the 1860s, it was a harbour almost unfrequented by large ships; now it is the second-busiest port in East Africa, and the capital of Tanzania. To discover the factors that influenced the early development of Dar es Salaam, read the following extracts from reports written in the nineteenth century.

1866: Report of the British Consul in Zanzibar

> Sir,
>
> I have the honour to report the return of the Sultan after a ten days' absence at Dar es Salaam, the proposed site of a new town on the mainland littoral, a few hours' steaming south of Zanzibar.
>
> The Sultan is expending large sums of money upon the transport of building material to this place, where he is at present erecting a palace, a fort and dwellings for his officials. His Highness hopes to form the nucleus of a trading port, whence caravan routes shall radiate into the interior and which by and by roads along the coast may connect with Kilwa and Lamu. . . .

1879: Joseph Thomson, *To the Central African Lakes and Back*

> As we gradually approach our destination, Dar es Salaam, we naturally look for some signs of a harbour. We see nothing, however, but an apparently unbroken coast-line, faced by dangerous reefs of coral, barely hidden beneath the water and revealed only by the roar of the waves. At last a slight opening like the mouth of a river is seen, and to this we steer. A rapid turn is made and fifty yards on lies the charming harbour of Dar es Salaam. . . . From all quarters a motley crowd came rushing down to

> the anchorage in all the stages of dress, undress and no-dress—Arabs, in all the ponderous glories of turbans, cummerbunds and gorgeous clothes; Indians, in their awkward though airy dresses; Waswahili in their kanzus resembling night shirts, and Wazaramo in simple loin cloths. . . . Unusual bustle reigned throughout the place; the rapidly rising town promised to be the finest on the east coast of Africa. Magnificent plantations of coconuts were formed and natives and traders began to flock to it from all parts. . . .
>
> But the revolution was of short duration. Suddenly the news arrived that the Sultan was dead and with this event a blight seemed to fall on the place. No Arab ever completes the unfinished work of his fathers. . . . The new Sultan did not like the place. . . . The builders left their partially completed houses, the woodwork to be devoured by ants and the walls to fall into unsightly ruins. Traders disappeared from it as from an infected spot. The caravans resumed their old routes to Bagamoyo and desolation reigned supreme. Grass now grows in the streets. The tenantless houses give shelter only to bats, owls, lizards and snakes, and the whole place wears the aspect of an old battered and deserted city, instead of a new one just springing into life.

1887: A. Leue, *Dar es Salaam*

> . . . When we set foot on its soil it was a town of ruins. The place and its port were desolate. . . .

The last extract was written by a German who came to Dar es Salaam and established a trading station there for the German East Africa Company. From this time onwards, the development of Dar es Salaam was bound up with the history of the whole country. In 1891 the rule of the German East Africa Company was replaced by that of the German government. Dar es Salaam was selected to be the seat of administration, the main port, and the commercial and communications centre for German East Africa, which later became Tanganyika. The German administration established itself in new buildings at the north-east end of the harbour front (figures 2E.5 and 2E.7), and this area still remains the hub of Tanzania's government. Behind the administrative area there grew in time the residential quarters for German officials—large villas, mostly double-storeyed, with thick, whitewashed stone walls, airy rooms, and verandahs. The villas were set in spacious, well-planted grounds. In 1919 the British took over from the Germans, and the area of well-spaced residences for Europeans expanded northwards (figure 2E.10).

Inland from the harbour, Indian immigrants were setting up small shops and workshops. In the early days, most of these buildings were small, simple, and in some cases ramshackle; they were usually the family business and dwelling house combined. As the Indians became well-established residents and business brought financial rewards, larger tenement houses were built. Most of these are divided into shops at street level, and above are flats rented by a number of families. (See figure 2E.9.) The population density is relatively high, and temples and mosques indicate the different Indian religious communities. (What would these be?)

However, the bulk of Dar es Salaam's population is African, as can be seen from the figures in table 2E.3.

Table 2E.3: Population of Dar es Salaam by ethnic group, 1867–1971

Year	Africans	Arabs and Asians	Europeans	Others	Total
1867	—	—	—	—	*c*.900
1900	18 000	1 480	360	160	20 000
1948	50 565	16 270	1 726	466	69 227
1957	93 363	29 986	4 479	914	128 742
1967	*	*	*	*	272 821
1971	*	*	*	*	392 000 (est.)

*Post-independence (1961), there was no official division into these groupings

In the African areas of Dar es Salaam, the commonest type of dwelling is the 'Swahili'-style house (figure 2E.16). These have central corridors which at the front lead out on to the street, and at the back run into a courtyard where the cooking is done. Generally there are three rooms on either side of the corridor, each rented by a different person or family. Some of the newer houses have a water tap in the yard, but most have neither water nor electricity. Figure 2E.12 shows how most families get their water. In houses on street corners, one of the rooms is often occupied by an Arab who uses it as a *duka* (shop), selling rice, flour, sugar and other basic needs. Meat, which is expensive for most people, is sold at separate butchers' shops, and vegetables, fruit and fish are generally obtained from street sellers or the markets.

What aspects of Dar es Salaam's growth are revealed by figures 2A.3 and 2A.7 on page 15, and by figure 2B.3 on page 17? Now refer to figure 2E.17 on page 46.

Dar es Salaam is growing rapidly—figure 2E.17, based on a map drawn in 1969, is already out of date. Can you plot where two recent developments—(i) a high-class residential estate, mainly for expatriates, (ii) a number of new factories—might have been located?

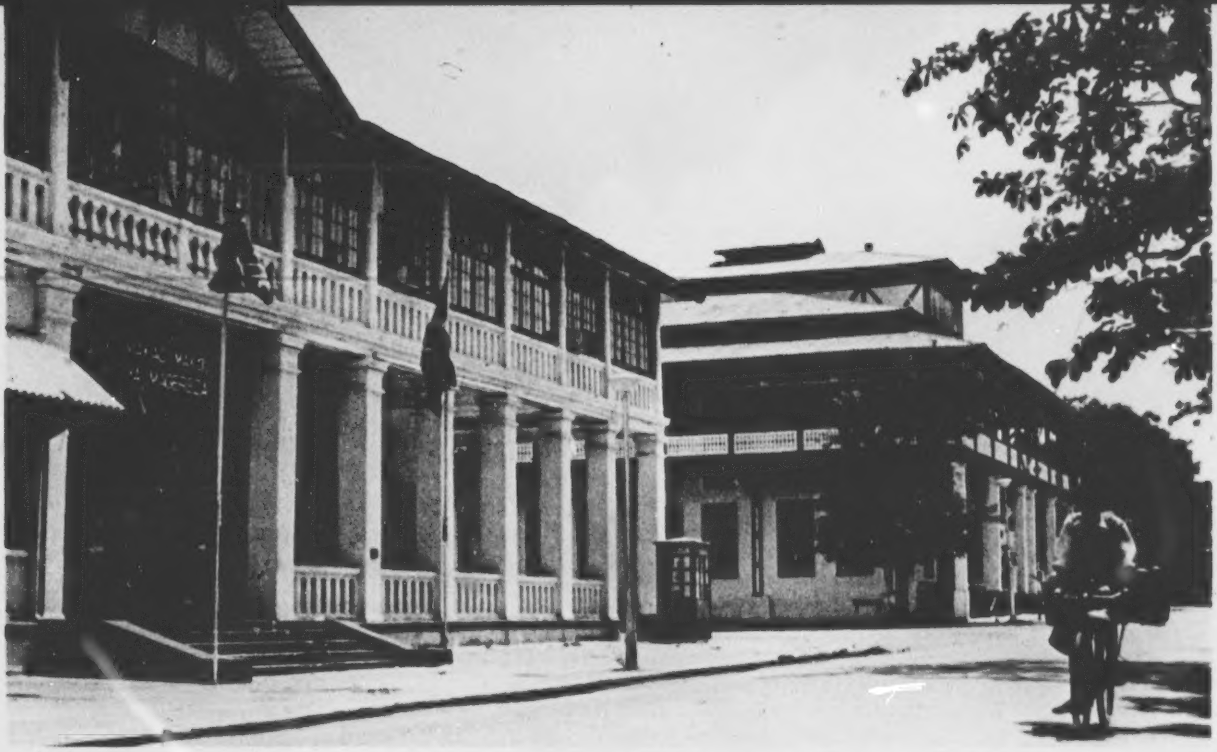


Figure 2E.7: The original German administrative buildings on the Dar es Salaam waterfront, now occupied by government departments

Figure 2E.8: The Bank of Tanzania, Dar es Salaam

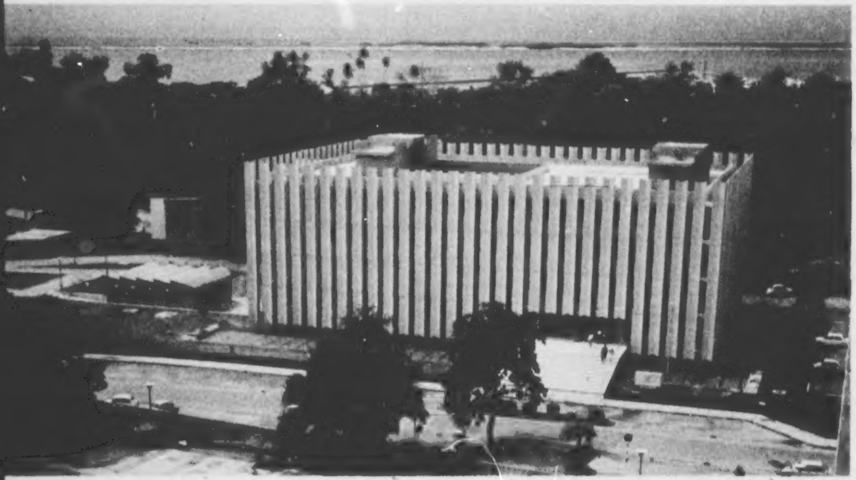


Figure 2E.9: View of central Dar es Salaam, showing part o the retail, business and Asian residential area

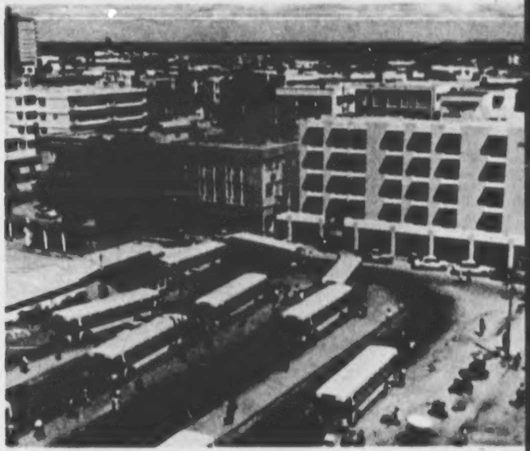


Figure 2E.10: A house in the Oyster Bay residential area, built in the British colonial era

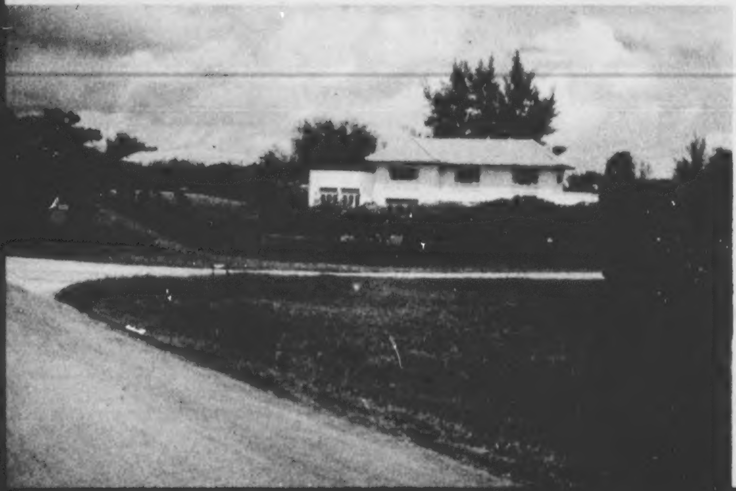
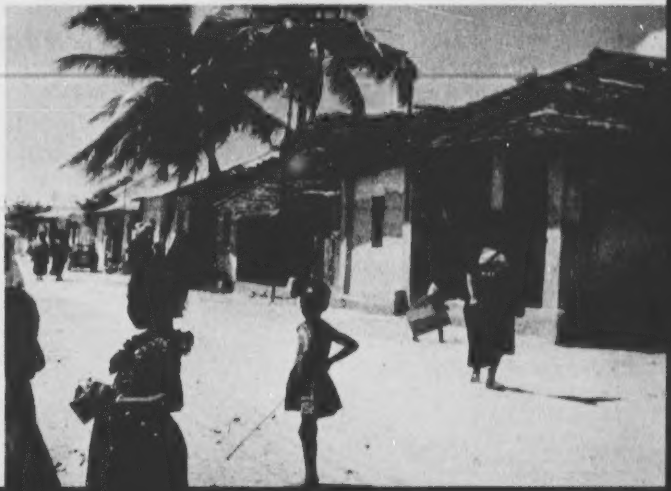


Figure 2E.11: A street scene in Kariakoo, an African residential area



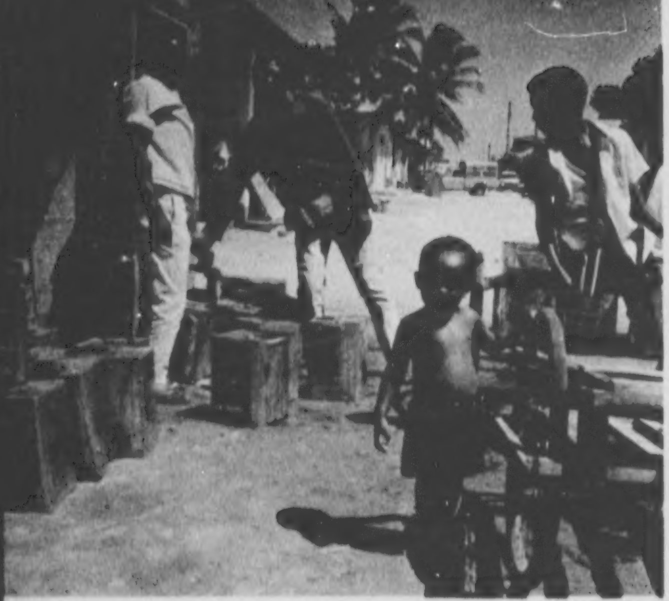


Figure 2E.12: Kariakoo

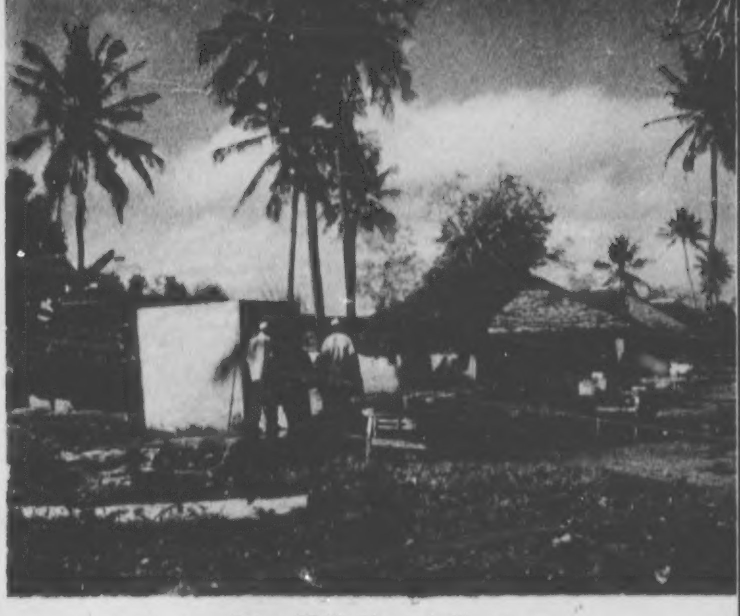


Figure 2E.13: Msasani village

Figure 2E.14: Scene beside the Morogoro road (main outlet road of Dar es Salaam)

Figure 2E.15: A new housing estate

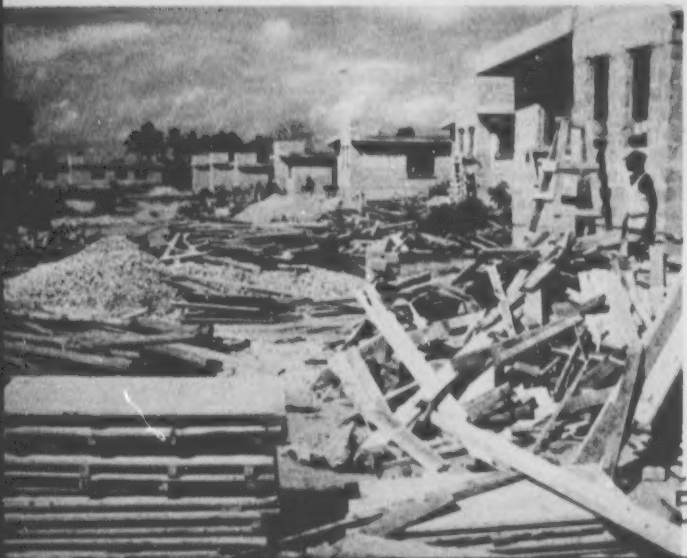
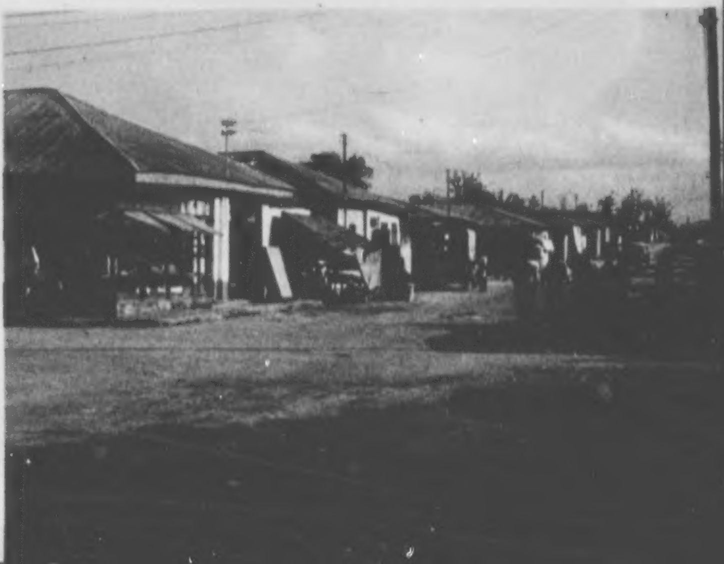


Figure 2E.16: Magomeni



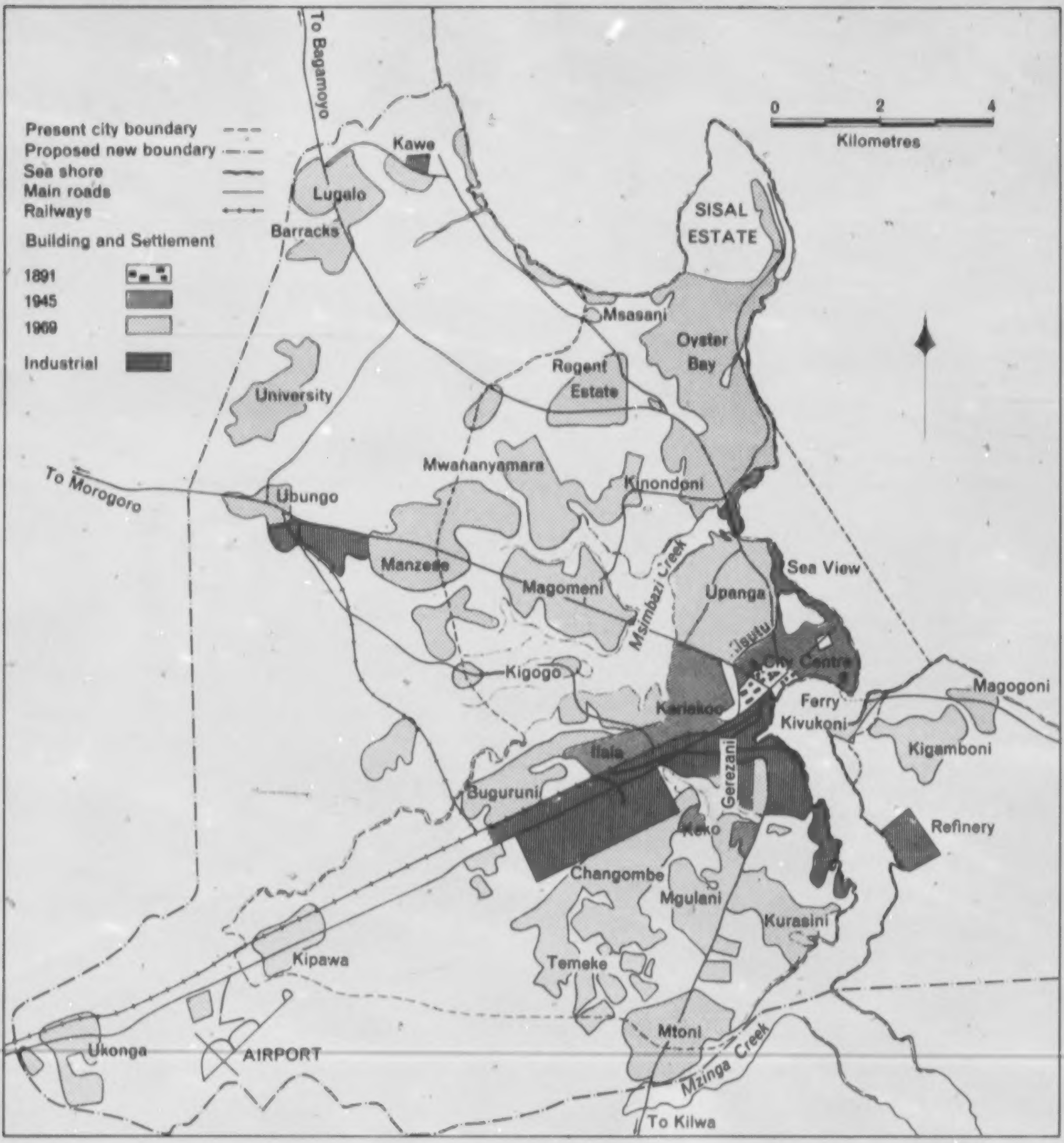

To Bagamoyo
0 2 4
Kilometres
Present city boundary
Proposed new boundary
Sea shore
Main roads
Railways
Building and Settlement
1891
1945
1969
Industrial
Kawe
Lugalo
Barracks
SISAL ESTATE
Msasani
Oyster Bay
Regent Estate
University
Mwananyamara
Kinondoni
To Morogoro
Ubungo
Manzese
Magomeni
Msimbazi Creek
Upanga
Sea View
Jisutu
City Centre
Kigogo
Kariakoo
Ferry
Kivukoni
Magogoni
Kigamboni
Ilala
Buguruni
Gerezani
Keko
Refinery
Changombe
Mgulani
Kurasini
Temeke
Kipawa
Mtoni
Mzinga Creek
Ukonga
AIRPORT
To Kilwa

*Figure 2E.17: Dar es Salaam—growth of city and suburbs (**after Pritchard**)*

As Dar es Salaam has grown, it has enveloped old villages, which nevertheless still retain much of their former character (see figure 2E.13). Even in the new areas, the rural background of the people shows up in the utilisation of any spare land along the roadside for growing crops (figure 2E.14). In many areas, development is planned. In the central business district, small buildings are being replaced by multi-storeyed office blocks, in the past financed from overseas. Some of the suburban areas are being developed by the National Housing Corporation (see figure 2E.15), but in others 'shanty town' development is occurring. For example, at Ubungo, 10 kilometres from the city centre, a survey of 78 new houses provided the information shown in figure 2E.18.

An attempt to raise the standard of housing is one of the aims of the Tanzanian Five Year Plan.

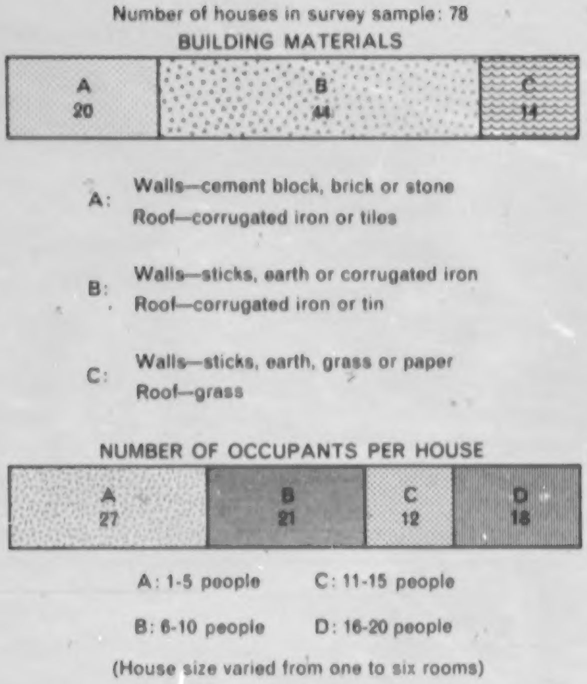


Figure 2E.18: Standard of housing in a survey sample of 78 new houses

Since finance is scarce, 'self-reliance' is encouraged (see figure 2E.19).

For the country person working on his *shamba*, the lure of a paid job in the city is great. He sees some of his friends who have already gone to the city return home for a holiday with smart clothes, presents, and perhaps a transistor radio. He hears stories of city life and the many entertainments it offers. He doesn't hear so much from his friends who go to the city, cannot find jobs, are lonely, and sometimes are even desperate enough to resort to stealing; these people have no money to return home. Of those who get jobs, many only receive a monthly wage of 180 shillings (9·77 Tanzanian shillings of 100 cents = $1 Australian). If we study the average city-dweller's budget in table 2E.4, can we tell how much better off he is than his friend who has stayed in the country?

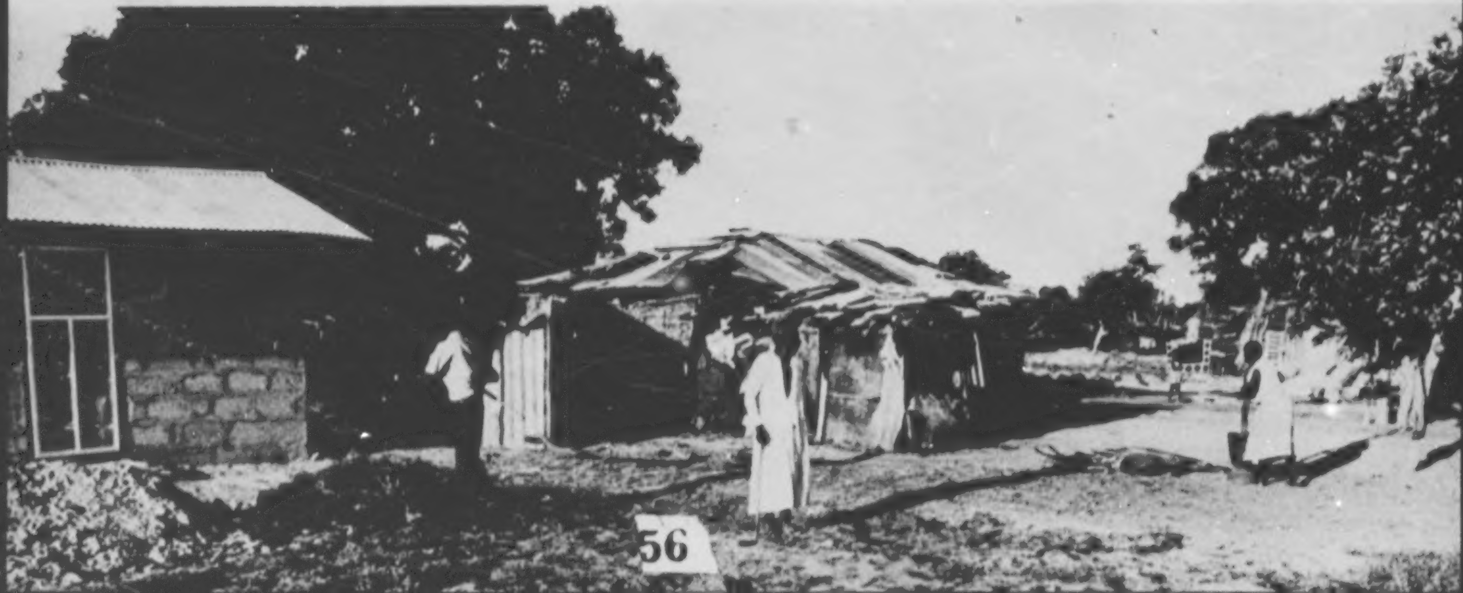
Table 2E.4: Budget of a young unmarried man earning 180 shillings a month

Income			**Expenditure per month**	
Wages		180·00	Insurance	22·75
			Rent for one room	40·00
			Water at 5 cents a *debe**	3·00
			Paraffin for cooking and light	6·00
			Food	
Deductions			5 kg rice	9·50
Personal tax	3·00		5 kg flour†	11·00
Levy	2·00		Beans	5·00
National			Sugar	3·00
Provident			Tea	3·00
Fund	9·00		Bread	10·00
			Fruit	2·00
	14·00	14·00	Nuts	3·00
			Fish or meat	5·00
				123·25
			Clothes, domestic items and other incidentals	42·75
PAY PACKET		166·00	TOTAL EXPENDITURE	166·00

*A four-gallon drum (approx. capacity 18 litres)

†Flour is mixed with water and cooked to make *ugali*—a common meal

Figure 2E.19: On the left is part of a house on the outskirts of Dar es Salaam, which was built by a young office worker; he made his own bricks from a mixture of sand, cement and water, pouring this into wooden frames to set, and then turning the bricks out and leaving them in the sun to dry. To the right is the house of a poorer man who has virtually no cash income. Analyse the differences between the two houses



PART 3

We have looked at various factors involved in the change that is occurring from rural to urban living, using examples from East Africa. Table 2E.5 lists African cities with a population of over 250 000. By referring to your atlas, plot these on a sketch map of Africa. Where does the change from rural living to urban living appear to be greatest? Can you suggest any reason for this? (Note that some of the cities had their last census in 1960. The growth rate in many cities is about 10 per cent. What, for example, would you estimate the population of Johannesburg to be now?)

Table 2E.5: African cities with a population over 250 000

City	Country	Population	Date of census
Cairo	U.A.R.	4 225 700	1966
Alexandria	U.A.R.	1 803 900	1966
Casablanca	Morocco	1 320 000	1969
Alger	Algeria	903 530	1966
Kinshasa	Zaire	901 520	1967
Lagos	Nigeria	841 749	1969
Ibadan	Nigeria	727 565	1969
Addis Ababa	Ethiopia	644 120	1967
Accra	Ghana	615 800	1968
Johannesburg	South Africa	595 083	1960
Dakar	Senegal	581 000	1969
Geza	U.A.R.	571 249	1966
Durban	South Africa	560 010	1960
Cape Town	South Africa	508 341	1960
Nairobi	Kenya	478 000	1969
Tunis	Tunisia	468 997	1966
Rabat-Sale	Morocco	435 000	1969
Ogbomosho	Nigeria	370 963	1969
Kano	Nigeria	342 610	1969
Tananarive	Malagasy Republic	332 885	1968
Oran	Algeria	327 493	1966
Pretoria	South Africa	303 684	1960
Marrakech	Morocco	295 000	1969
Port Said	U.A.R.	283 400	1966
Abidjan	Ivory Coast	282 000	1964
Kumasi	Ghana	281 600	1968
Fez	Morocco	280 000	1969
Dar es Salaam	Tanzania	272 821	1967
Suez	U.A.R.	264 500	1966
Tripoli	Libya	247 365	1964

Source: *United Nations Demographic Yearbook*, 1970

Now that you have studied the three parts of this unit dealing with urban development, consider the questions posed at the beginning: do you think big cities are likely to spring up all over Africa, rapidly changing most Africans from rural to city dwellers? Will African cities be like Australian cities?

Unit F: 'Ujamaa'—Tanzanian change

Many references have been made in this study to changes that have taken place in traditional African society. Some of these were:

- political change that has occurred in Africa in the twentieth century
- change brought about by the estates established by expatriates
- change brought about by the development of cash cropping by small-holders
- change caused by rapid urbanisation.

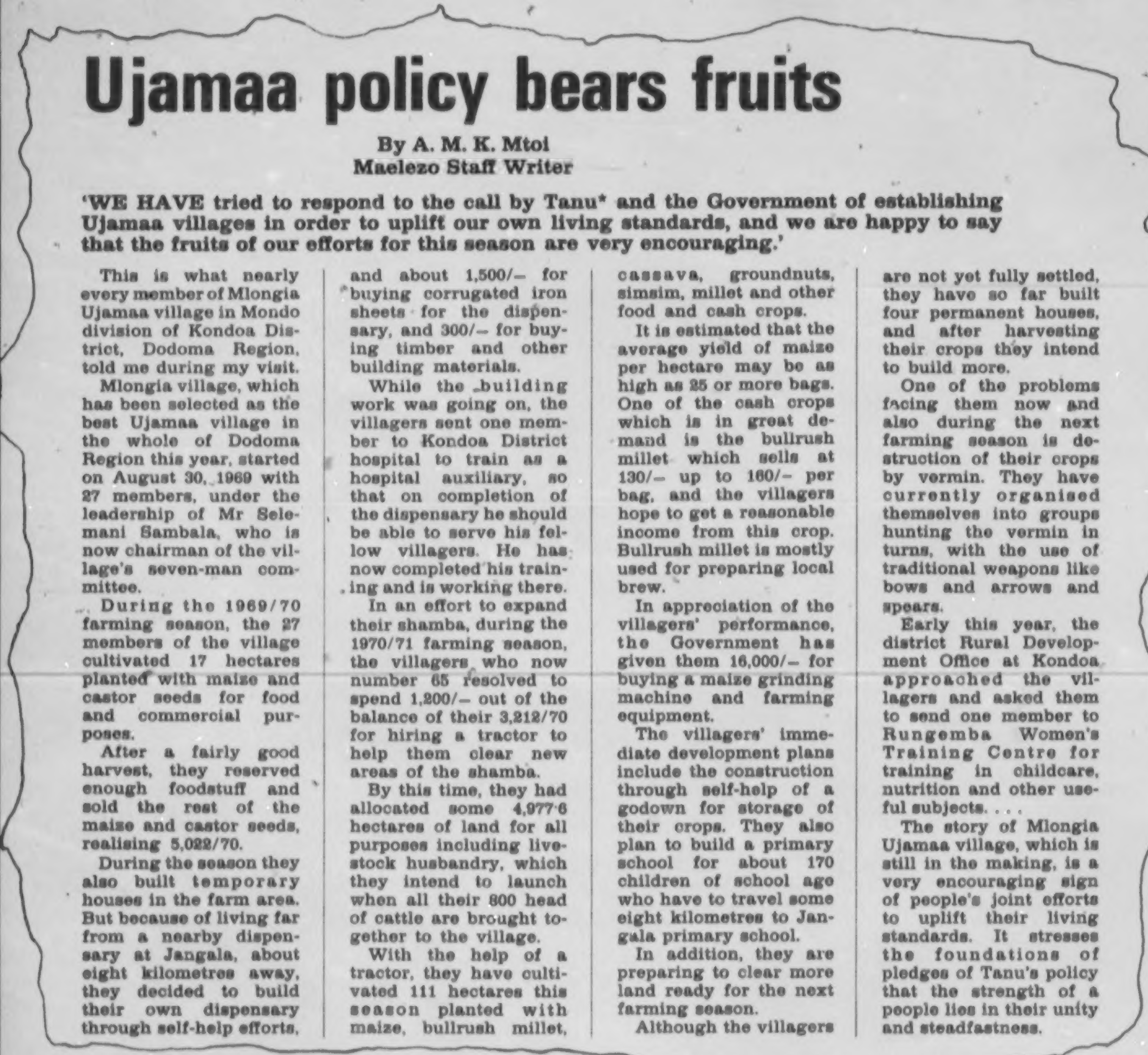
Change generally involves not only physical change, but also a change in people's attitudes. For example, the United Nations sent a team from the Food and Agriculture Organisation (F.A.O.) to Tanzania; its purpose was to investigate ways of improving pastures and the breed and quality of cattle, in order to benefit the country's economy. But for tribes who are traditional cattle herders, such as the Masai and Wagogo, wealth is determined by the number of cattle a man owns. An average family homestead may have 15 to 20 animals; a man with over 100 animals is very wealthy, and has the prestige that goes with wealth; cattle are also used to pay 'bride price' when a man wishes to marry. It is the number of cattle, not their quality, that is important. To kill cattle, to have fewer but of higher quality, to sell for meat —these ideas go against all tradition. The F.A.O. team's biggest difficulty was changing the attitudes of the Tanzanian people towards their cattle.

The Tanzanian government is faced with the problem of how to raise the standard of living of the rural dwellers, who make up over 90 per cent of the total population. The current policies aimed at solving this problem are those of 'self-reliance' and *Ujamaa*.

Because of Tanzania's lack of finance, the policy of 'self-reliance' was introduced to enable the development of the country's resources. The emphasis was put on small-scale projects which would mainly rely on the labour of the people. The people themselves were to be responsible for this largely rural development, rather than leaving it to the government to take all the initiatives. Another element of the policy was the taking over of foreign-owned banks, and complete or partial state ownership of commercial and industrial enterprises.

Ujamaa is a Swahili word which means something like 'familyhood'. Under this scheme, the government is trying to get rural people to live and work together so that they can have the benefits of community living, such as a water pump, a dispensary or a school. It is a method of cooperative development that is currently being encouraged in all parts of Tanzania, and is a form of change that has developed within the country. It is 'Tanzanian change'. *Ujamaa* activities have featured a great deal in Tanzanian newspapers. Study the newspaper extracts and the photographs that follow (figures 2F.1–2F.7), and then answer these questions:

1. What changes is the government trying to bring to the lives of the Tanzanian people, and why?
2. What methods are being used to bring about change?
3. What are some of the problems that are being faced by new *Ujamaa* settlers and by the government of Tanzania, in the implementation of this policy?
4. What change is the '*Ujamaa* village' policy making in the distribution of population?
5. What would you expect might be the long-term effects of *Ujamaa* on Tanzanian society as a whole?
6. Do you think a policy of *Ujamaa* would work in Australia? If not, why not? Should it be tried in other developing countries? What might be some advantages and disadvantages there?



Ujamaa policy bears fruits

By A. M. K. Mtoi
Maelezo Staff Writer

'WE HAVE tried to respond to the call by Tanu* and the Government of establishing Ujamaa villages in order to uplift our own living standards, and we are happy to say that the fruits of our efforts for this season are very encouraging.'

This is what nearly every member of Mlongia Ujamaa village in Mondo division of Kondoa District, Dodoma Region, told me during my visit.

Mlongia village, which has been selected as the best Ujamaa village in the whole of Dodoma Region this year, started on August 30, 1969 with 27 members, under the leadership of Mr Selemani Sambala, who is now chairman of the village's seven-man committee.

During the 1969/70 farming season, the 27 members of the village cultivated 17 hectares planted with maize and castor seeds for food and commercial purposes.

After a fairly good harvest, they reserved enough foodstuff and sold the rest of the maize and castor seeds, realising 5,022/70.

During the season they also built temporary houses in the farm area. But because of living far from a nearby dispensary at Jangala, about eight kilometres away, they decided to build their own dispensary through self-help efforts, and about 1,500/– for buying corrugated iron sheets for the dispensary, and 300/– for buying timber and other building materials.

While the building work was going on, the villagers sent one member to Kondoa District hospital to train as a hospital auxiliary, so that on completion of the dispensary he should be able to serve his fellow villagers. He has now completed his training and is working there.

In an effort to expand their shamba, during the 1970/71 farming season, the villagers who now number 65 resolved to spend 1,200/– out of the balance of their 3,212/70 for hiring a tractor to help them clear new areas of the shamba.

By this time, they had allocated some 4,977·6 hectares of land for all purposes including livestock husbandry, which they intend to launch when all their 800 head of cattle are brought together to the village.

With the help of a tractor, they have cultivated 111 hectares this season planted with maize, bullrush millet, cassava, groundnuts, simsim, millet and other food and cash crops.

It is estimated that the average yield of maize per hectare may be as high as 25 or more bags. One of the cash crops which is in great demand is the bullrush millet which sells at 130/– up to 160/– per bag, and the villagers hope to get a reasonable income from this crop. Bullrush millet is mostly used for preparing local brew.

In appreciation of the villagers' performance, the Government has given them 16,000/– for buying a maize grinding machine and farming equipment.

The villagers' immediate development plans include the construction through self-help of a godown for storage of their crops. They also plan to build a primary school for about 170 children of school age who have to travel some eight kilometres to Jangala primary school.

In addition, they are preparing to clear more land ready for the next farming season.

Although the villagers are not yet fully settled, they have so far built four permanent houses, and after harvesting their crops they intend to build more.

One of the problems facing them now and also during the next farming season is destruction of their crops by vermin. They have currently organised themselves into groups hunting the vermin in turns, with the use of traditional weapons like bows and arrows and spears.

Early this year, the district Rural Development Office at Kondoa approached the villagers and asked them to send one member to Rungemba Women's Training Centre for training in childcare, nutrition and other useful subjects. . . .

The story of Mlongia Ujamaa village, which is still in the making, is a very encouraging sign of people's joint efforts to uplift their living standards. It stresses the foundations of pledges of Tanu's policy that the strength of a people lies in their unity and steadfastness.

---

* TANU: Tanganyika African National Union, a political party formed in 1954 and now Tanzania's only party. Since independence (1961) and the formation of Tanzania (1964), the party has laid down the broad lines of government policy, based on a clear socialist ideology.

WAGOGO EXODUS PUTS UJAMAA POLICY ON TRIAL

by
Abdallah Ngororo

BY THE END of June this year, 3775 Wagogo families, nearly 22,000 people, had moved into new villages. Hundreds of others are still pouring in.

A majority of these have no homes. In some villages water is scarce. The farming season is just around the corner. The challenge of handling this human situation has led President Nyerere to declare that both Tanu and the Government were on trial in Dodoma.

The Wagogo, mostly nomadic and often hitting the headlines when struck by famines, are altering history.

This history of the Wagogo, cultivating pastoralists, has been one of recurrent famines. Between 1928 and 1959 there were 21 years of localised food shortages or famines in some parts of Ugogo. . . .

This is the tragic past that the Wagogo have known. And it is the same past that prompted President Nyerere in 1968 to make a special call to the Wagogo to move to live together in villages. He made this call at Mpwayungu.

There were two main reasons for this. First, the Wagogo can improve their agriculture and in two or three good years they can have an agricultural surplus.

Secondly, in case of an outbreak of famine, the Government would be in a better position to offer assistance and relief to the communities.

It took the Wagogo two years to respond to this call. Last year, people in Kondoa and Mpwapwa districts began settling in villages. And, suddenly, this year thousands of Wagogo families moved into over 60 planned Ujamaa villages after harvesting their crops.

Grandparents, fathers and mothers, aunts, infants all abandoned living in scattered homesteads in preference to the hope of a more settled and decent life that these villages promised.

The exodus of people into Ujamaa villages in Dodoma District has been underestimated. It is the challenge of handling this mammoth resettlement with least human suffering that led President Nyerere to say that both Tanu and the Government 'are on trial'. The test is to give to the Wagogo the chance to realise the future that has been promised to them. They know of the past: they are holding on to the future.

Since the exodus was underestimated, it is not surprising that both the Party and the Government have been caught flatfooted. A majority of the thousands of families that have settled are now living in shacks that neither keep out the heat nor the cold.

Some of the villages have no water and the Government has been forced to ask people not to move into 20 villages that are without it. Water, a precious fluid, is also needed in building houses.

As a result there is a crash programme to drill over 60 wells by the end of October this year. Only with the realisation of this objective will the building of houses be speeded up. However, the agricultural season is just around the corner and the Government is taking steps not to be overtaken by time.

A regional tractor unit, with not less than 40 tractors, is to be set up very soon to cultivate the land for the Wagogo. The use of tractors will have a dual advantage: the soil will be more than 'scratched' and the people will be able to concentrate on building houses. The initial emphasis will be on growing food crops. Other methods designed to improve traditional agriculture include the use of ox-ploughs and yard manure. . . .

Apart from offering the possibility of agricultural surpluses and the smoothness of providing and coordinating famine relief, community living among the Wagogo will enable the cooperative movement in the area to discharge its functions more effectively.

It will also allow maximum use of already existing social facilities — let alone those to come in the future. For example, there are at the moment a number of vacancies in some of the existing primary schools in Ugogo. The reason being that some of the families are at quite a long distance away from the schools.

All in all there are 84 surveyed Ujamaa villages in Dodoma District. Movement of people has been directed to just over 60 of these. Most of the villages are at the centre of the district. The periphery was left out because of the low population.

While charting the boundaries of the villages, four factors were considered: availability of water, size of a village to make it an economic unit, the number of families and livestock a village could comfortably sustain, and unsuitability of the soil to particular crops.

Talking of the problems and development of the Wagogo without mention of cattle will be odd. To all of the Wagogo—not all are cattle owners—a cow is more than a commodity to be sold. And an outsider cannot miss the glaring pathetic contrast between the potential wealth of cattle owners and their real and stark poverty in other material possessions.

At the moment, Ugogo is supporting more livestock than is good for the soil. It is hoped that the existence of these new villages will both induce the reduction of excessive animals in a given village and motivate the selling of cattle.

Nearly each of the villages will have a specified number of livestock deemed good for the habitat. Each village will communally own a herd of cattle. These will be bought from individual owners in the village. This will provide revenue to individuals while keeping the number of cattle at the planned level. The village may sell some of its cattle outside and earn for itself money.

Such a system will benefit both the village and the individuals while, at the same time, keeping only enough healthy animals without any detriment to the soil.

In addition to having villages that would rely more on livestock economy, there would be other villages concentrating on food and cash crop production. In years to come the growth of vines and oil seeds will change the lives of the Wagogo.

The people of Dodoma, having the lowest per capita monetary gross farm output in Tanzania with the exception of Singida Region, are now involved in a process that will change their way of life for the better. They are writing a new history. A history of man grappling with the environment.

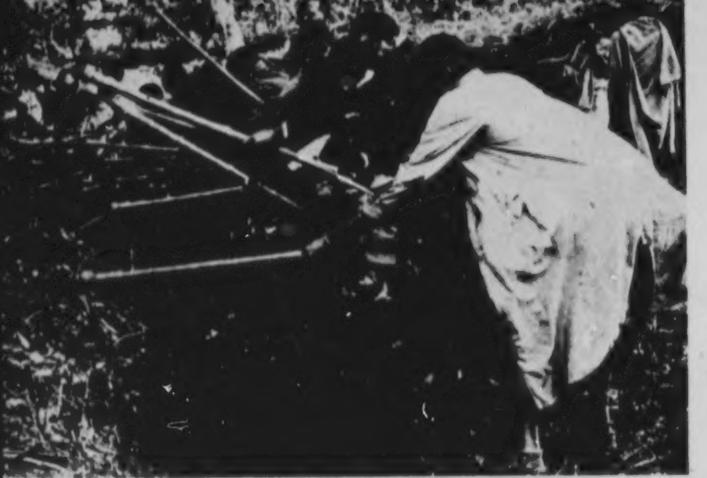


Figure 2F.1: ***Ujamaa*** *in action—road building at Suvandetti village in Arusha Region*

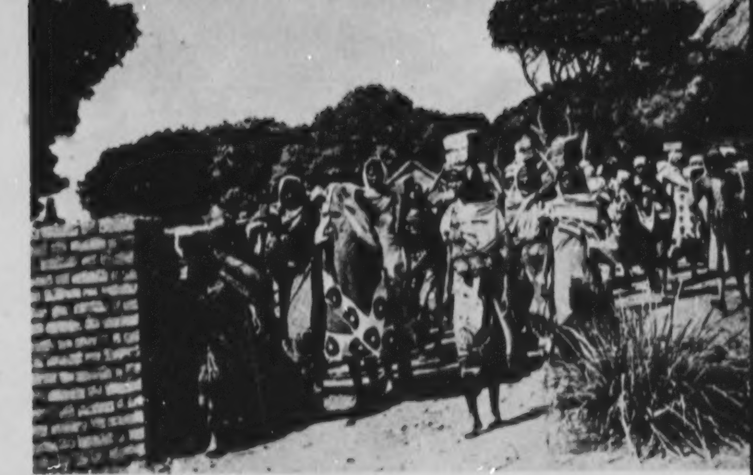


Figure 2F.2: Women head-loading bricks for house building at Kisese, a ***Ujamaa*** *village in the Kondoa district*

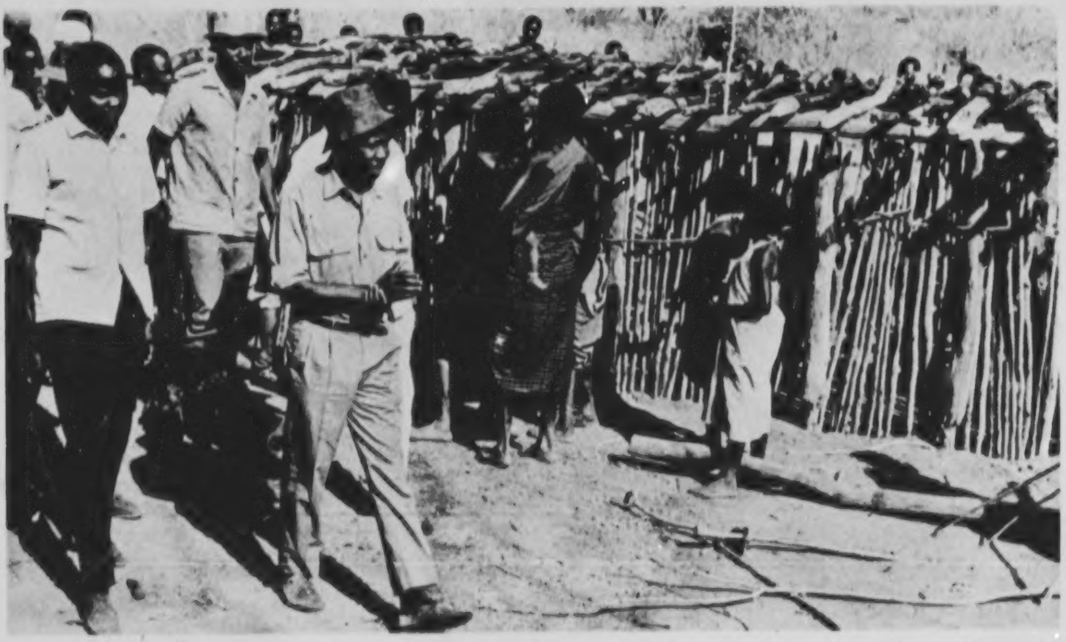


Figure 2F.3: President Nyerere inspecting a house under construction at the ***Ujamaa*** *village of Chilonwa in Dodoma Region*

Figure 2F.4: ***Ujamaa*** *introduces ox ploughs to the farmers of Muwimbi village in Iringa Region*

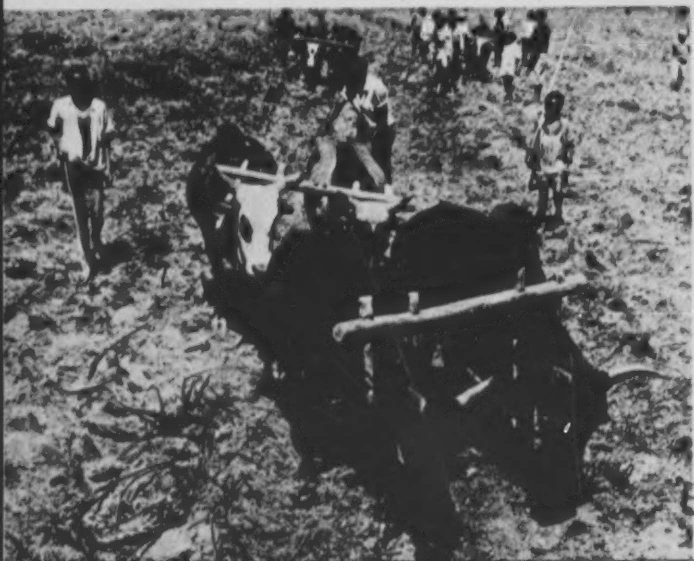
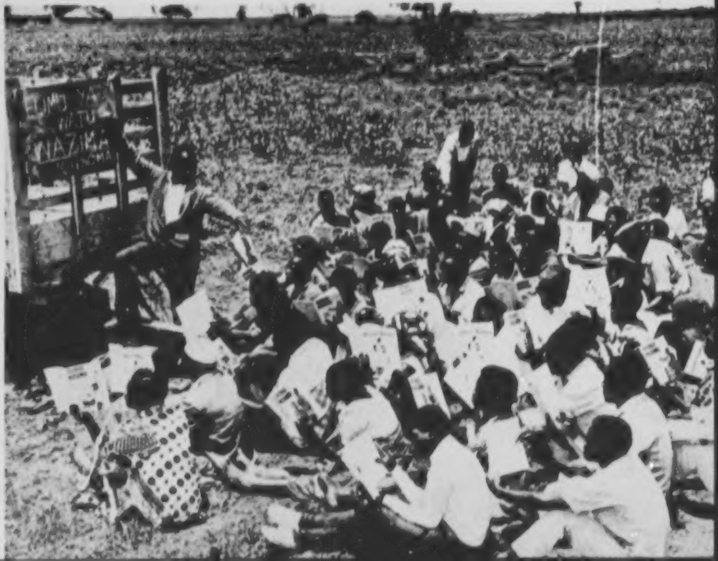


Figure 2F.5: An adult education class at Igowale village in Iringa Region



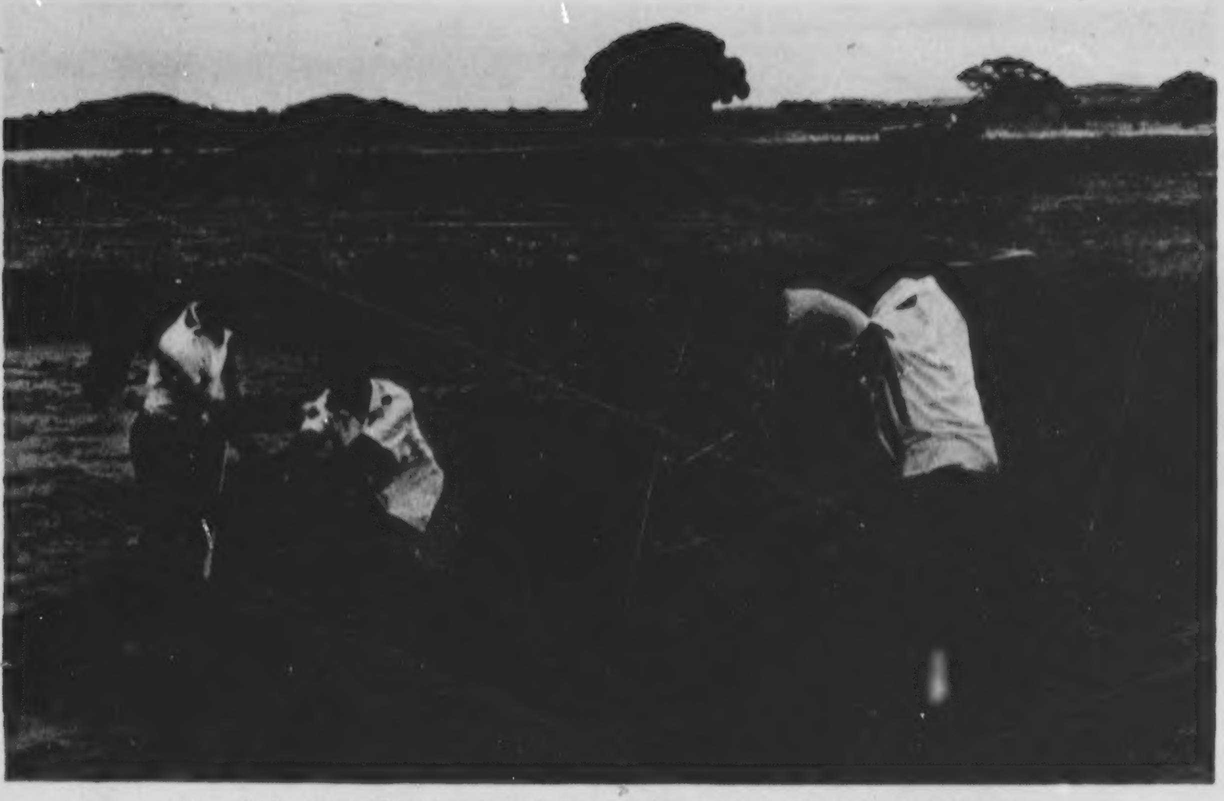


Figure 2F.6: Both traditional and mechanised farming methods are being used to level land for irrigation in this ***Ujamaa*** *settlement in Mwanza Region on the shores of Lake Victoria*

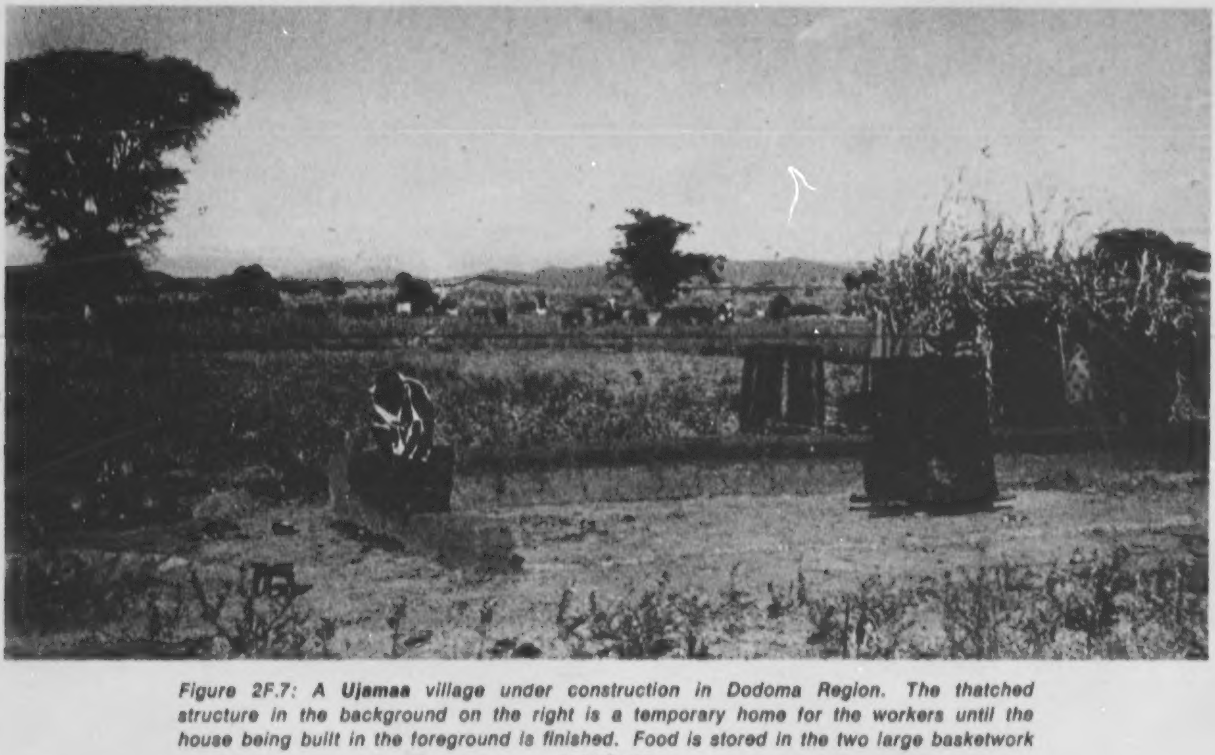


Figure 2F.7: A ***Ujamaa*** *village under construction in Dodoma Region. The thatched structure in the background on the right is a temporary home for the workers until the house being built in the foreground is finished. Food is stored in the two large basketwork containers*

Unit G: Variations in change

This study has concentrated on change in Tanzania. However, in some areas of Africa, change has been or will be different. Two countries that provide great contrast in quite different ways are Libya and South Africa. Read the following description of Libya. What will be the basic difference between planning for development in Libya and planning in Tanzania?

Libya

Early in the twentieth century, Libya became an Italian colony. In 1943 it was placed under Anglo-French administration, and in 1951 it gained its independence. In 1958, oil was discovered by Esso Libya, and by 1967 the oil reserves were estimated at 4200 million tonnes—70 per cent of all the known reserves of the African continent. The oil boom brought changes, lessening Libya's dependence on overseas economic aid. The land of deserts and sparse oases began to develop industry, build power stations, and establish transport and communications systems. Today oil accounts for 99·9 per cent of Libya's exports, the remaining 0·1 per cent being made up of dates and hides. She supplies 31 per cent of Europe's crude oil imports. In 1971 there were 35 registered foreign oil companies operating in Libya—American (controlling 87·5 per cent of the oil produced in the country), West German, French, Spanish, Swiss, British and Italian.

In September 1969 the king of Libya was deposed by a revolutionary coup, led by a group of army officers, and the country was proclaimed a republic. In 1971 all mineral resources were nationalised.

Only 1 per cent of Libya is pastureland, although there are about 300 000 nomadic stock breeders. In addition to limited amounts of wheat and barley, Libya produces only 30 000 tonnes of citrus fruit and 32 000 tonnes of olives a year; this is insufficient to feed her population, and she is forced to import foodstuffs.

The nomadic herdsmen of Libya lead lives in many ways similar to those of the tribesmen of Dodoma Region in Tanzania. If you were in the Libyan government's place, how would you plan to improve the nomadic herders' lives?

South Africa

In South Africa, development has been organised mainly by Europeans. The following figures show the degree of European ownership of land in four different countries of Africa:

Tanzania	2·5 per cent
Kenya	7·0 per cent
Swaziland	49·5 per cent
South Africa	89·0 per cent

In South Africa, development of agriculture, mining and industries is still very much in the hands of the Europeans. The following extract, written by an African, gives one view of the problems caused by the changes resulting from European occupation:

> When Africa was colonised and when the mines were opened up for exploitation in Southern and Central Africa, African labour was required in increasing quantities. In the new mining town the African suffered various degrees of hunger, disease, cultural starvation and psychological reaction of being ruled over by others not of his kind. 'Westernisation', 'detribalisation', 'Europeanisation'—are these the changes an African wants? Does an African want a situation as in Rhodesia and South Africa, where Africans are denied political rights because they do not have the educational and other requirements to qualify for political participation? Do they wish to be excluded from areas of their own land?

One cannot fully study the influence of expatriates on Africa without studying the aims and effects of South Africa's 'apartheid' policy. This is a large topic, but one which is vital; you should investigate it through individual research and class discussion.

A new group of expatriates

People from outside Africa have influenced life in that continent in a variety of ways. In the latter half of the nineteenth century, Asians came mainly to the east coast of Africa to provide labour for railway construction and to work on plantations. Most were Indians and Pakistanis. Today their descendants, and those more recently arrived, work mainly in the retail trade and commerce. In the second half of the twentieth century, a new group of Asians have come to Tanzania, also to build a railway. Examine figure 2G.1 showing construction work on the Tanzam railway, which will run from Lusaka in Zambia to Dar es Salaam.

The building of the Tanzam railway is an interesting example of how change in one country can affect another. Landlocked Zambia, after the break in relations that followed Rhodesia's Unilateral Declaration of Independence in 1965, required an alternative outlet to the ocean, for previously her copper exports had been transported through Rhodesia to the port of Beira in Mozambique. The Tanzam railway, 2414 km long and costing over $A300 million, is being constructed by the People's Republic of China under

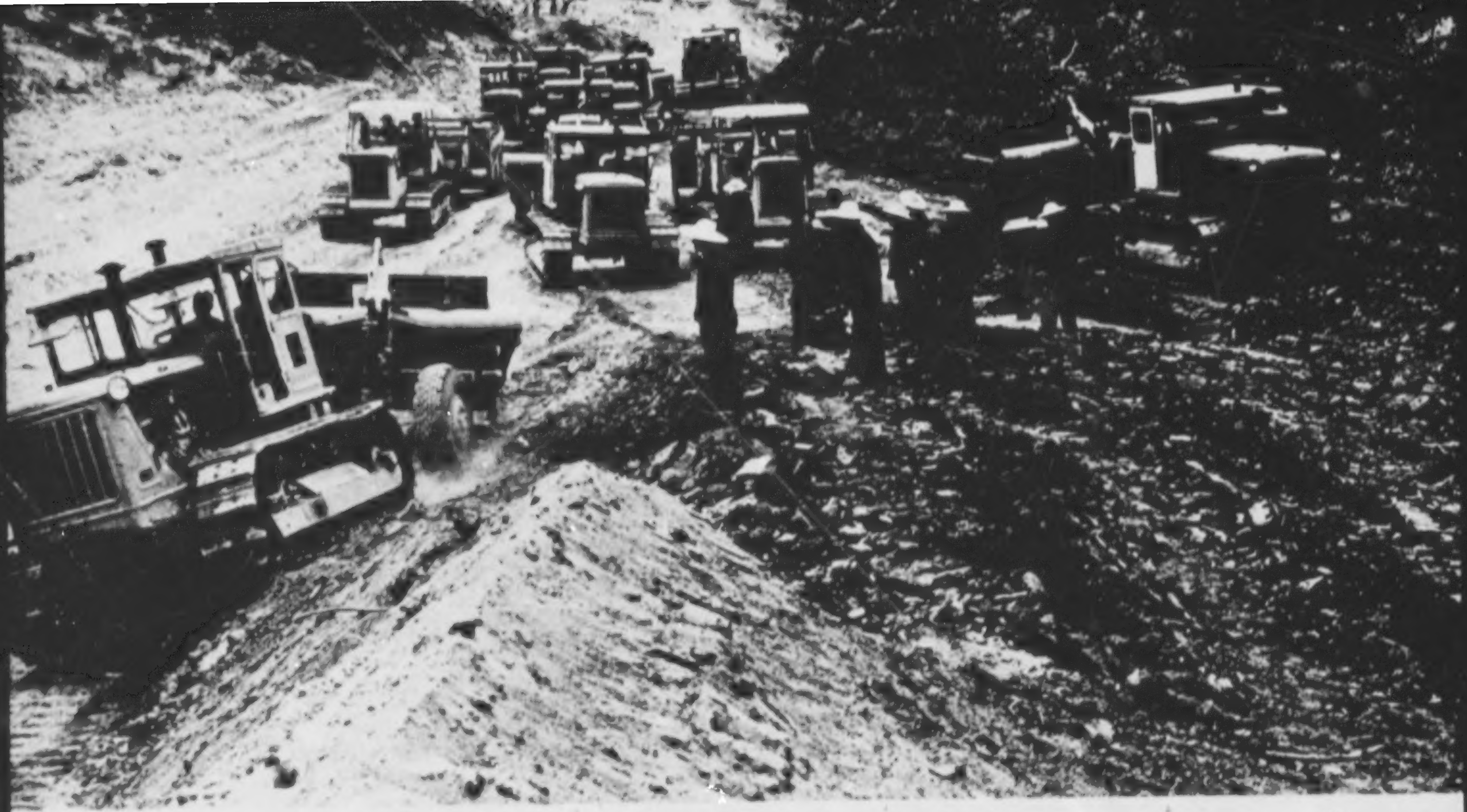


Figure 2G.1: Construction in progress on the Tanzam railway in Tanzania. From which country do these workers come? Who would have provided the machinery? Close to the Tanzam railway, the United States is building a new road, also from Tanzania to Zambia. Why might the Americans have decided to do this?

an interest-free loan arrangement, and is planned to be completed by 1976. Its main purpose is to transport Zambia's copper to Tanzania for shipment overseas. But what might some of the other results be? For example, the railway line will pass undeveloped coal and iron resources near Njombe in Iringa Region of Tanzania. Will this mean that an iron and steel industry may develop there? What might be the effect of bringing another group of people into the country?

The Chinese are playing a different role from that taken by the European expatriates in the past, who generally performed skilled or managerial tasks. The Chinese have brought their engineers, surveyors and doctors, but they have also provided labourers to do the physical work on the railway line. Instead of working just at 'top' level, they are working at all levels, and spend much more time in rural areas, in close contact with the people.

African change

Many of the more developed countries—both Western and communist—are giving aid to assist the process of 'change' in Africa. But change must be 'African' change—development in a way that Africans want. In Tanzania, in particular, we have seen that the emphasis is on a development policy based on 'self-reliance' and African socialism, where individuals have to depend on themselves and help one another, and where no one is exploited. The problems of implementing this policy are many; although change in certain things is incredibly fast in many areas, change generally can only be very gradual. As President Nyerere said, Tanzania's real revolution would be to change from women's labour to animal labour.

FURTHER ACTIVITIES

Collect newspaper cuttings for a month on issues concerning African nations. Discuss the various matters raised, and see if there are any similarities, or differences, from one nation to another.

Collect material on the problems of the Australian Aborigine in the twentieth century. To what extent, and in what ways, are the Aborigines' problems similar to those of Africans?

3

Change comes to an ancient land: irrigation and mining in north-west Australia

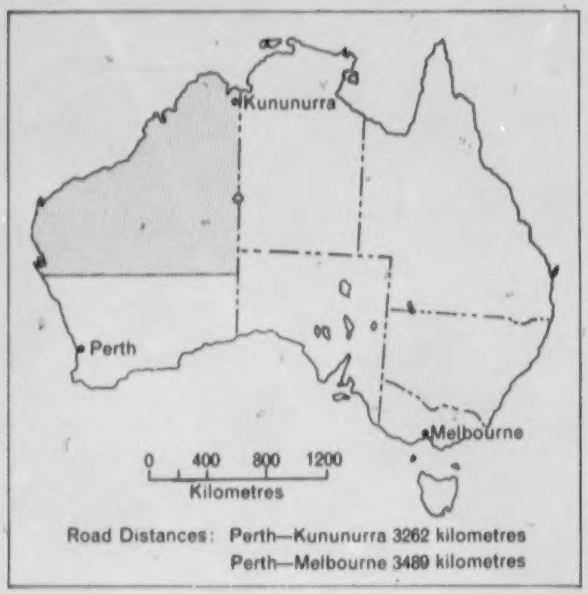

Kununurra
Perth
Melbourne
0 400 800 1200
Kilometres
Road Distances: Perth—Kununurra 3262 kilometres
Perth—Melbourne 3489 kilometres

Figure 3.1: North-west Australia—an ancient, isolated and dry land

North of the 26th Parallel is a part of Western Australia, the largest Australian state, known as north-west Australia—a land of great distances, eroded landscapes, and few people.

The first Englishman landed on the north-west coast in 1688, returning in 1699. Recorded in his journal were references to a dry and dusty land; the inhabitants, he said, were 'the miserablest people in the world'. Who was this Englishman whose reports were so unfavourable? He is commemorated in different place-names along the coastline, and a bay on the north-west coast was named after the *Roebuck*, the ship in which he made his second voyage.

How did the so-called 'miserablest people in the world' live in this dry and dusty land? These earliest inhabitants migrated to Australia tens of thousands of years ago; they were a nomadic people, dependent on hunting and food collecting. Their implements were simple ones, made of stone, bone and wood. In this land that so unfavourably impressed the early Europeans who visited its shores in the seventeenth century, the early Australians had achieved a delicate balance with a very harsh environment. They occupied the land in isolation from the rest of the world, developing a complex religious and cultural life of their own.

Nearly two hundred years after William Dampier, there came overland from the east of the continent men with cattle and horses—men of a different race and way of life, with little understanding of the early inhabitants and their age-old traditions. Thus change came to the seemingly changeless land of the north-west.

It was the rugged, eroded Kimberley district that the new pioneers entered, an area where the work of the Aboriginal artist could be seen in caves, on rocks and on trees. This art had very great meaning for the Aborigine, linking him with his 'dreamtime'.

Changes come: the pioneer pastoralists

The first overlanders drove their cattle and sheep as far as 5000 kilometres, and the years 1883 and

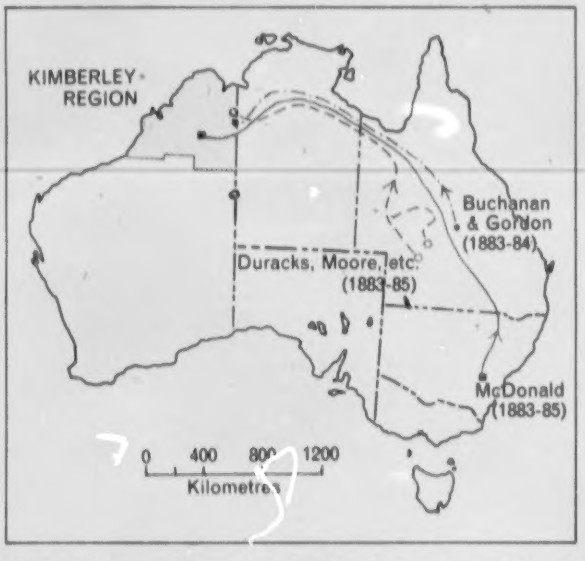

KIMBERLEY REGION
Buchanan & Gordon (1883-84)
Duracks, Moore, etc. (1883-85)
McDonald (1883-85)
0 400 800 1200
Kilometres

Figure 3.2: Some of the great cattle treks to the north-west

1884 saw stock slowly converging on the Kimberley region; sheep were driven inland from the tiny new port of Derby, along the Fitzroy River and its tributaries, while thousands of cattle plodded westward from New South Wales and Queensland. Among the famous pioneers of the Kimberley area were the Durack family. From Patrick Durack's notebook come the following entries, relating to the four parties that set out in 1883 to overland cattle from Queensland to the East Kimberleys:

> **June 12, 1883.** Cousin Big Johnnie leaves Thylungra on today with two thousand head of breeding cattle, brand 7PD....
>
> **June 14, 1883.** My brother Jerry leaving from Galway Downs with 1270 head of Thylungra breeding cattle, brand 7PD....
>
> Tom Kilfoyle and Tom Hayes ... starting from Galway Downs with 2000 head....
>
> **July 29, 1883.** Cousin Long Michael and Black Pat started ... 2250 head of cattle....
>
> | | |
> |---|---|
> | Total cattle left on road for Western Australia in these four mobs | 7520 head. |
> | Horses with all four parties (approx.) | 200 head. |
> | Working bullocks with teams | 60 head. |
>
> Mary Durack, *Kings in Grass Castles*
> (London: Constable, 1959)

Some idea of the detailed organisation required for this great trek overland to the north-west can be gained by reading the list in Mary Durack's book of some of the stores purchased in preparation. They ranged from soap to sugar, from horse-bells and spurs to billies and anvils.

In the early stages of the trek the stock were harder to control. 'Creatures of habit, the cattle would take time to setle to the rhythm of the road, to become adjusted to a meaningless moving on through slow weeks dissolving into months and years.'

The route these overlanding parties followed stretched north to the Gulf of Carpentaria and then westward to the remote isolation of Western Australia. The general direction the drovers knew, but what decided their day-to-day or week-to-week movements? *Kings in Grass Castles* records: 'The drovers knew droughts and they knew floods—those sudden avalanches of water pouring from some distant part of the river into country where perhaps no rain had fallen for many months....' So then, as now, it was drought and the weary wait for it to break, or floods and waiting for the rivers to go down. It was 25 September 1885 when the Ord River was reached and the long trek ended. The Duracks began this slow, hazardous transcontinental journey with 7520 head of cattle; their numbers had dwindled to less than half when it ended.

The country of the pioneer pastoralists

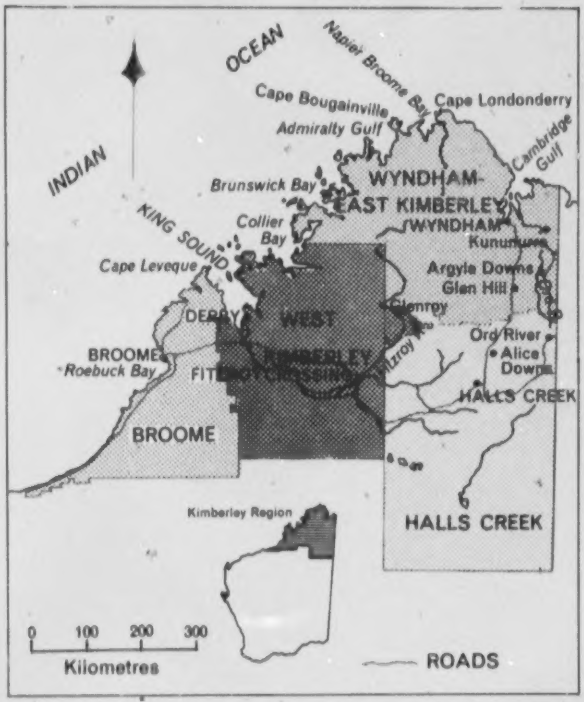

INDIAN
OCEAN
Napier Broome Bay
Cape Bougainville
Cape Londonderry
Admiralty Gulf
Cambridge Gulf
Brunswick Bay
WYNDHAM-
EAST KIMBERLEY
WYNDHAM
Kununurra
Collier Bay
KING SOUND
Cape Leveque
Argyle Downs
Glen Hill
DERBY
WEST
KIMBERLEY
Glenroy
Fitzroy
BROOME
Roebuck Bay
FITZROY CROSSING
Ord River
Alice Downs
HALLS CREEK
BROOME
Kimberley Region
HALLS CREEK
0
100
200
300
Kilometres
ROADS

Figure 3.3: The Kimberley region—the four shires of which it consists cover an area bigger than Victoria and Tasmania combined. Some of the well-known East Kimberley homesteads are shown

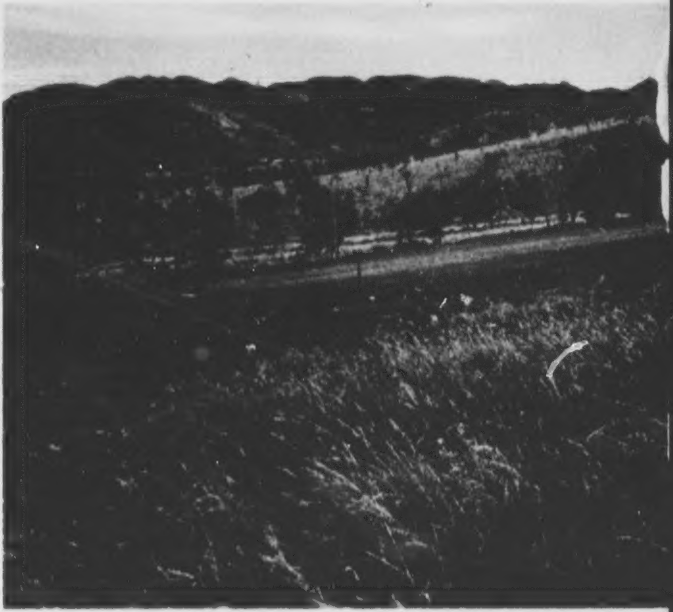


Figure 3.4: A roadside scene in the East Kimberleys—note the banding of the rock in the background ranges. Describe the natural vegetation

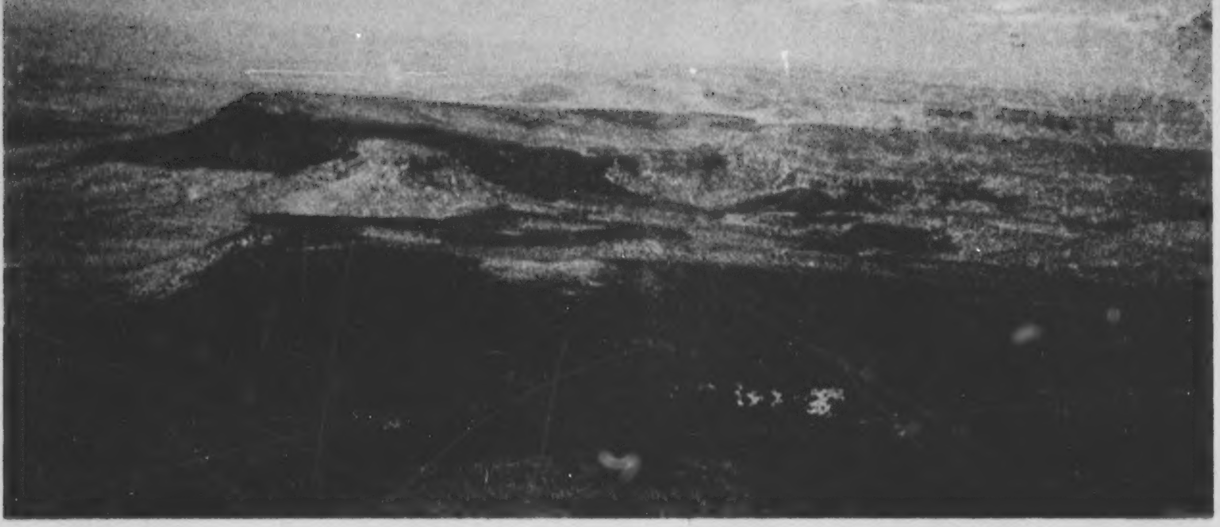


Figure 3.5: The Kimberleys from the air—the banded rocks here are capped with basalt. What influence does this have on the shape of the slopes?

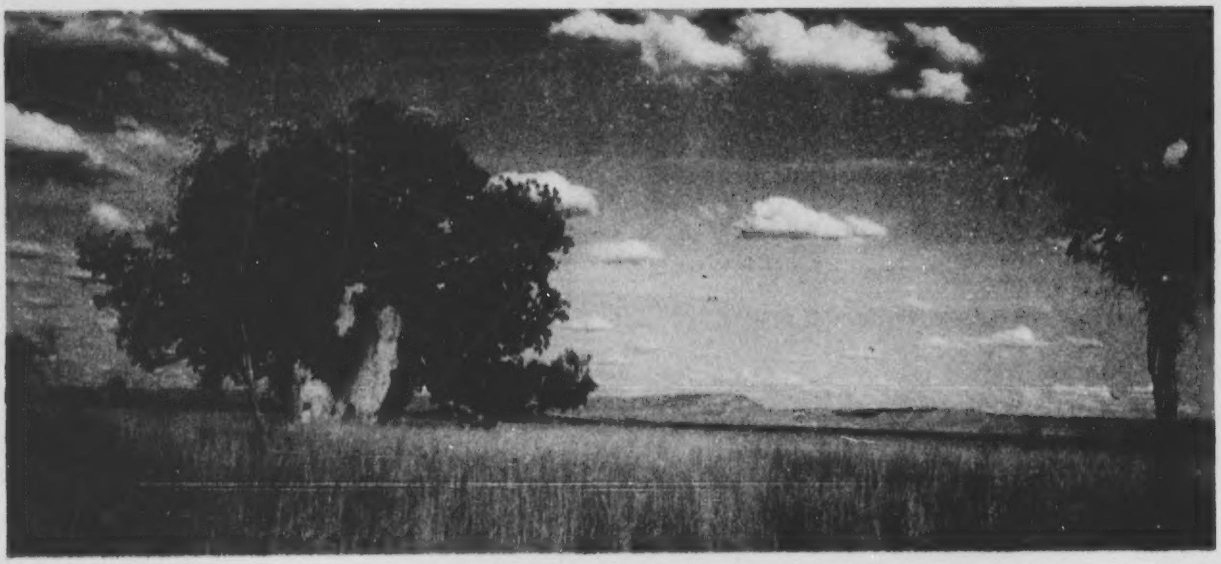


Figure 3.6: A baobab tree in tall savanna grassland between Wyndham and Kununurra. Nature, like man, needs to conserve water in this region

Figure 3.7: Ivanhoe Crossing on the Ord River, near the original homestead of the Durack family

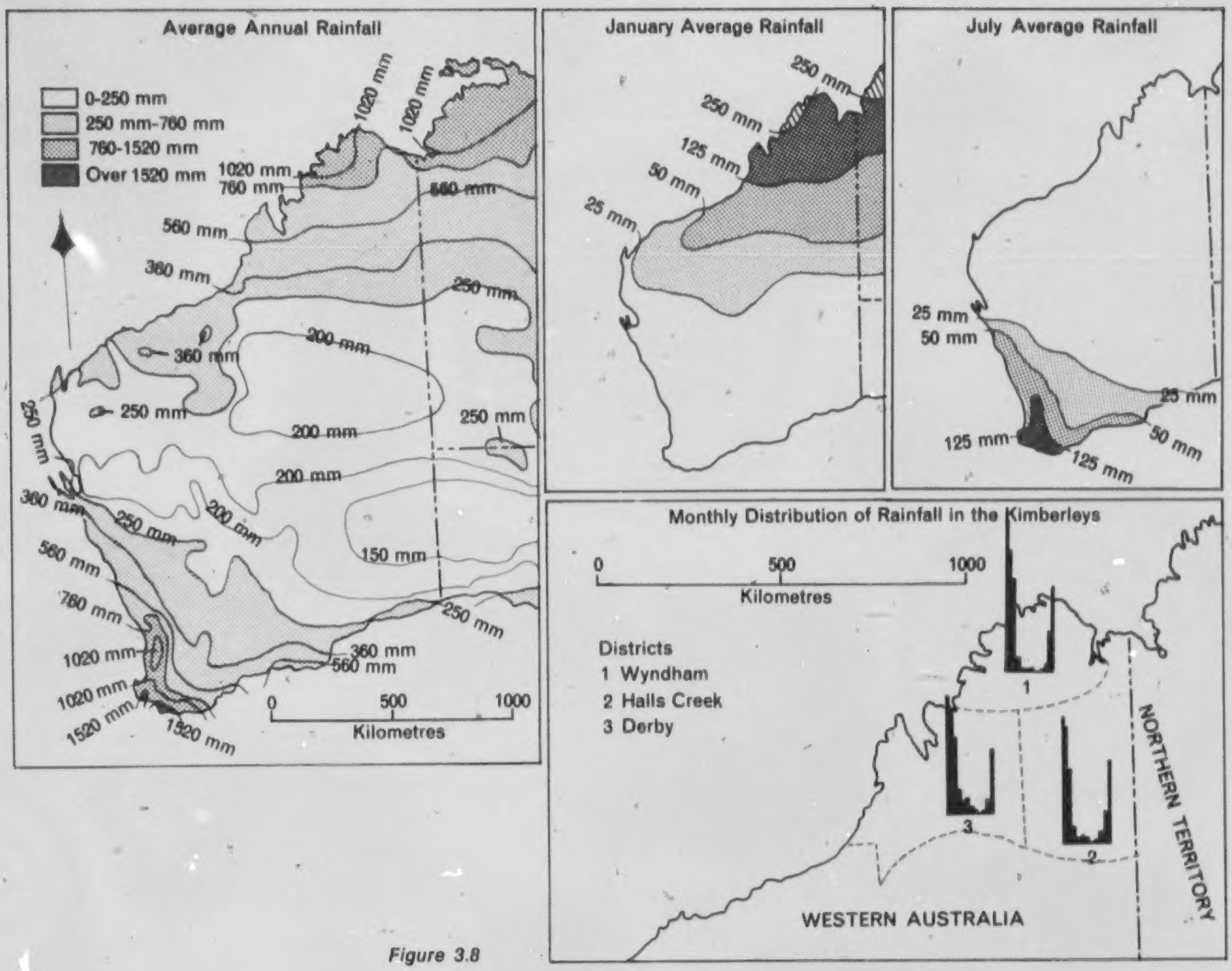

Average Annual Rainfall
0-250 mm
250 mm-760 mm
760-1520 mm
Over 1520 mm
1020 mm
1020 mm
1020 mm
760 mm
560 mm
560 mm
360 mm
250 mm
360 mm
200 mm
250 mm
250 mm
250 mm
200 mm
200 mm
360 mm
250 mm
200 mm
150 mm
560 mm
760 mm
250 mm
1020 mm
360 mm
560 mm
1020 mm
1520 mm
1520 mm
0
500
1000
Kilometres
January Average Rainfall
250 mm
250 mm
125 mm
50 mm
25 mm
July Average Rainfall
25 mm
50 mm
25 mm
50 mm
125 mm
125 mm
Monthly Distribution of Rainfall in the Kimberleys
0
500
1000
Kilometres
Districts
1 Wyndham
2 Halls Creek
3 Derby
1
3
2
NORTHERN TERRITORY
WESTERN AUSTRALIA

Figure 3.8

' "Cattle Kings" ye call us, then we are kings in grass castles that may be blown away upon a puff of wind.' So cried the great pioneer pastoralist, Patrick Durack.

With this quotation in mind, study figures 3.1, 3.2 and 3.8 and the information given in table 3.1; from the climatic data, can you suggest the problems that faced the early pastoralists?

Using the data in table 3.1, draw a graph to show the mean monthly temperature and rainfall for both Halls Creek and Wyndham. Can you now answer the following questions?

Table 3.1: Temperature and rainfall, Halls Creek and Wyndham

	J	F	M	A	M	J	J	A	S	O	N	D
HALLS CREEK, East Kimberley												
Average temperature (°C)	30	30	28	26	21	19	18	21	24	29	31	31
Average rainfall (mm)	137	107	71	13	5	5	5	3	3	13	36	79
Average annual temperature: 26°C			Average annual rainfall: 477 mm									
WYNDHAM, North Kimberley												
Average temperature (°C)	31	31	31	30	27	25	24	26	29	31	32	32
Average rainfall (mm)	185	152	117	20	5	5	5	2	3	10	51	104
Average annual temperature: 29°C			Average annual rainfall: 659 mm									

- How does Halls Creek's average monthly temperature for July compare with your local area's July average?
- How would you describe the seasons in the Kimberleys?
- Try to find an explanation for the seasonal pattern of rainfall in north-west Australia.
- Look at the temperatures, and explain how these would affect the usefulness of the rainfall.
- What do you think are the main problems in the Kimberleys with regard to climate? How would they affect the length of the growing season, and the cattle industry?
- Some of the heaviest rainfall in the north-west of Western Australia is brought by tropical cyclones. One cyclone in 1939 almost destroyed the township of Port Hedland. On the daily weather chart for 30 December 1970 in figure 3.9, a tropical cyclone, code-named 'Loris', is shown near Broome. The preliminary report stated that 'stations began battening down yesterday as they prepared to face the full onslaught of cyclone Loris'. Find out in which months of the year these destructive storms are likely to approach the coast of north-west Australia, and in which other parts of Australia they occur. What precautions, if any, could you take if you received warning that a cyclone was heading in your direction?

Of all the climatic problems that you have suggested might exist in the Kimberleys, how many are significant for the inhabitants today?

What part have the Aborigines played in the development of the pastoral industry?

The pastoralist in a pioneer land

When the Kimberley district was opened for settlement, the land was taken up in blocks of up to 400 000 hectares. Since then, stock have wandered over vast areas, grazing on natural grasses. Fencing, water supply, improvement of herds, conservation of pastures—what has been done in these fields? Let us consider one major problem: that of transport. Does the drover still walk his

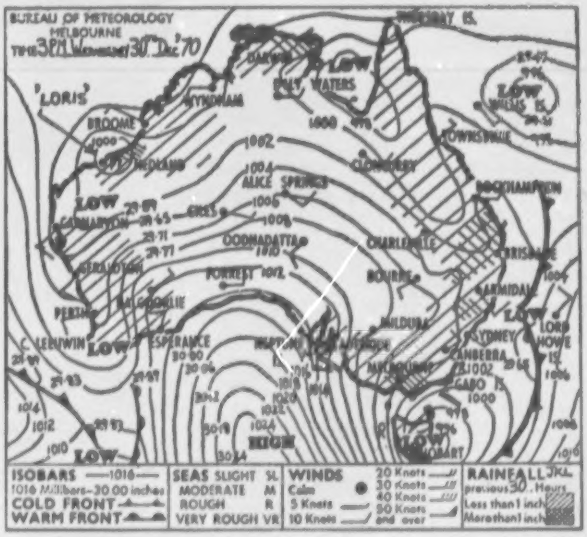

BUREAU OF METEOROLOGY
MELBOURNE
TIME 3PM Wednesday 30 Dec '70
'LORIS'
LOW
BROOME
WYNDHAM
DARWIN
DALY WATERS
THURSDAY IS.
WILLIS IS.
TOWNSVILLE
CLONCURRY
ALICE SPRINGS
ROCKHAMPTON
CHARLEVILLE
BRISBANE
OODNADATTA
FORREST
BOURKE
ARMIDALE
KALGOORLIE
PERTH
C. LEEUWIN
ESPERANCE
MILDURA
SYDNEY
CANBERRA
GABO IS.
LORD HOWE IS.
HOBART
HIGH
ISOBARS —1016—
1016 Millibars—30.00 inches
COLD FRONT
WARM FRONT
SEAS SLIGHT SL
MODERATE M
ROUGH R
VERY ROUGH VR
WINDS
Calm
5 Knots
10 Knots
20 Knots
30 Knots
40 Knots
50 Knots and over
RAINFALL
previous 30 Hours
Less than 1 inch
More than 1 inch

Figure 3.9: Weather chart for 30 December 1970—The ***Age****, Melbourne*

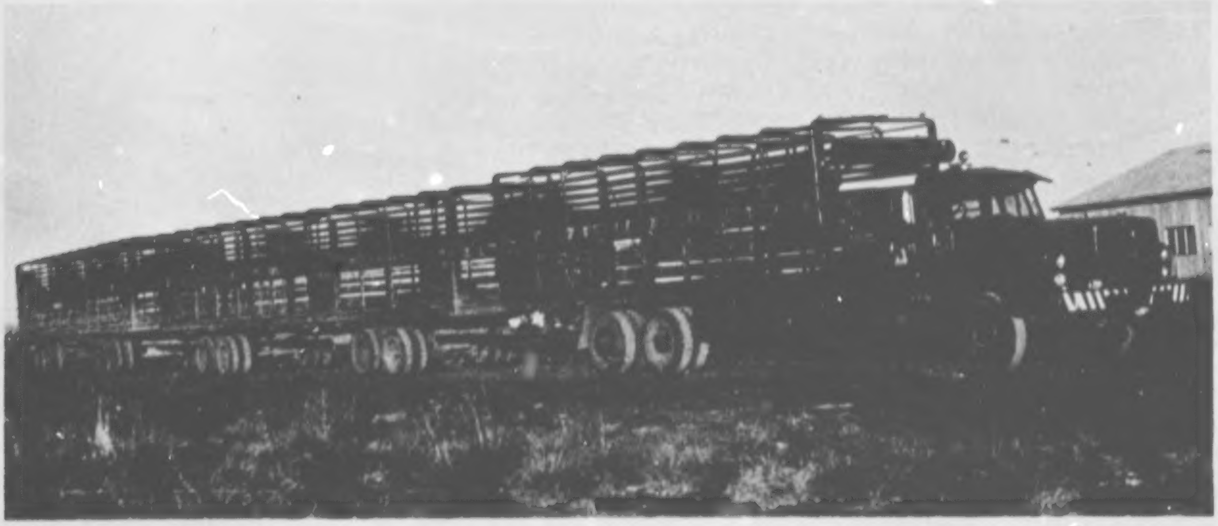


Figure 3.10: A beef-cattle road train—up to four trailers may be drawn by the prime mover

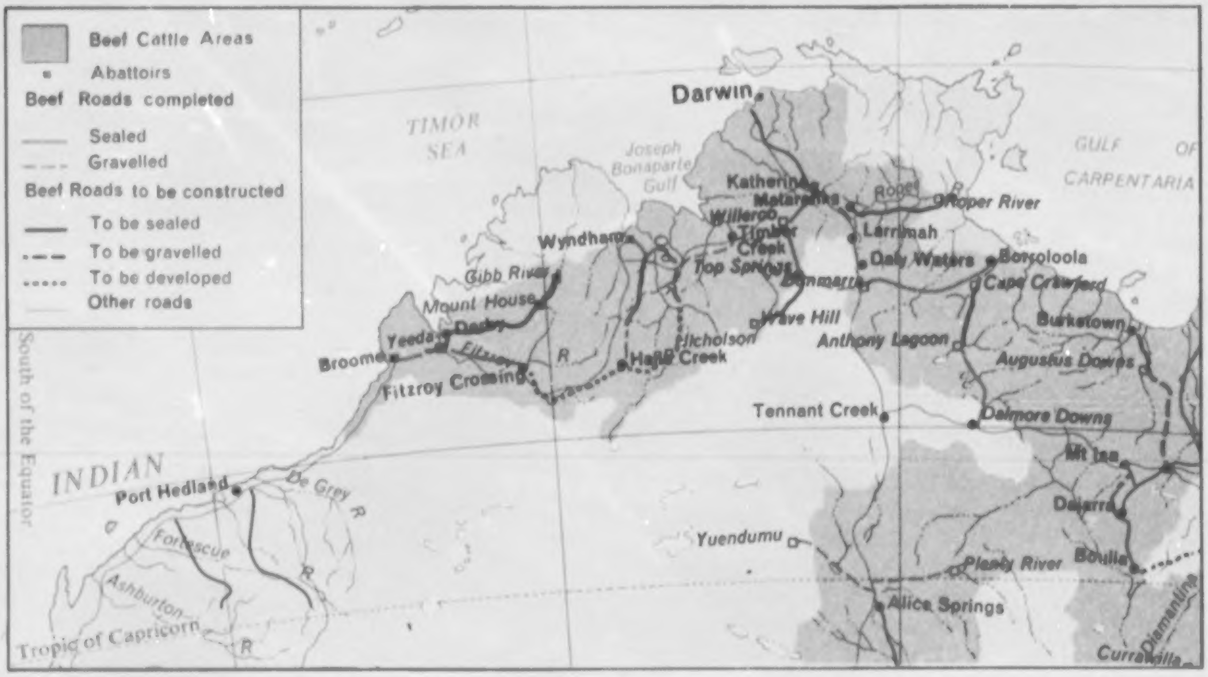

Beef Cattle Areas
Abattoirs
Beef Roads completed
Sealed
Gravelled
Beef Roads to be constructed
To be sealed
To be gravelled
To be developed
Other roads
Darwin
TIMOR SEA
Joseph Bonaparte Gulf
GULF OF CARPENTARIA
Katherine
Mataranka
Roper R
Roper River
Willeroo
Timber Creek
Larrimah
Wyndham
Top Springs
Daly Waters
Borroloola
Gibb River
Cape Crawford
Dunmarra
Mount House
Derby
Wave Hill
Yeeda
Broome
Fitzroy R
Nicholson
Halls Creek
Anthony Lagoon
Burketown
Augustus Downs
Fitzroy Crossing
Tennant Creek
Delmore Downs
Mt Isa
South of the Equator
INDIAN
Port Hedland
De Grey R
Fortescue
Ashburton
R
Yuendumu
Dajarra
Plenty River
Boulia
Alice Springs
Diamantina
Currawilla
Tropic of Capricorn

Figure 3.11: Beef roads and meatworks

cattle on a long, slow journey over harsh country to a coastal market?

In 1949, a new idea was put into operation—the air-beef scheme. An abattoir was set up at Glenroy Station (see figure 3.3), and here, in the dry season, carcasses were loaded on to a plane which flew them to the meatworks at Derby. More recently, road trains have come into common use (figure 3.10). Graders and bulldozers are at work in the dust and heat of the tropical sun, carving out tracks and roads that are changing the face of the Kimberleys (figure 3.11). Along these beef roads, the silence of the night may be shattered by the thundering of a road train, taking fifty to eighty head of cattle out to the coast after the 'Wet'.

What do you think are the advantages and disadvantages of each of the following methods of transporting cattle from the Kimberleys to a coastal meatworks?

- droving
- transporting carcasses by air
- transport in road trains along beef roads.

On the lonely homesteads, the burden of isolation has been lessened also. In the centre of the house is a vital link with the outside world—the transceiver set. It enables the station people to call for help in the case of accident or illness, while a gossip by radio with the neighbours helps to make life less lonely for the cattleman's wife; 'School of the Air' links the children with a distant unseen teacher, and telegrams can be transmitted and received through the radio network of the Royal Flying Doctor Service.

A great deal has been written about the Flying Doctor Service. Find out how this service could help you if you lived on a remote cattle station and became sick, or suffered a serious accident.

The School of the Air also uses the radio network of the Flying Doctor Service. How can a teacher get to know his students, who may be hundreds of kilometres away, and how can the members of the School of the Air come to know one another?

Growing crops?

Referring again to the temperature and rainfall data in table 3.1, and to the graphs of monthly distribution of rainfall in figure 3.8, what do you think will be some of the problems facing agriculturalists in the Kimberley region?

Will the growing season be long enough for the cultivation of crops? How will the height of rivers fluctuate between January and July? How can the rivers be tamed and harnessed, so that water can be used on the lowland, and so that crops can be grown in spite of the late and uncertain wet season and the long dry season?

If you could trap the surging waters of the 'Wet' and distribute them to the lowland, what crops would you grow? Where, then, would you market them? Poor water control, no railways, few people, distant markets, uneconomic production: this, then, is another vicious cycle similar to that in the Kaira District of India (page 7). Show this cycle in the form of a diagram. Where would you attempt to break it?

A pioneer irrigation scheme

In 1946, only sixty years after the arrival of the first pastoralists, a research station was established on the lower Ord River, for the purpose of studying the problems of irrigation in relation to tropical agriculture (figure 3.12). Crop trials were carried out over many years, and it was found that cotton, safflower, rice and sugar cane could be grown under irrigation. By 1963 a diversion dam had been completed on the lower Ord. One of the main aims of the Ord scheme was to establish closer settlement by setting up farms, approximately 250 hectares in area, on the irrigated land. With closer settlement being planned, people's needs had to be anticipated and many services provided.

Figure 3.12: Aerial view of the Kimberley Research Station on the Ord River, established jointly by the Commonwealth and Western Australian governments to help find the most suitable land use for the Kimberley region

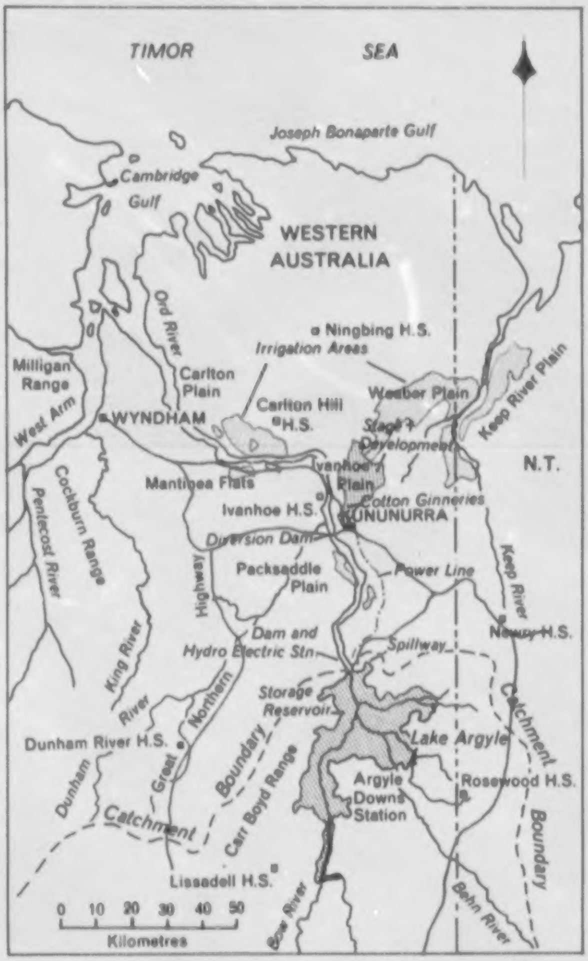

TIMOR
SEA
Joseph Bonaparte Gulf
Cambridge
Gulf
WESTERN
AUSTRALIA
Ord River
Ningbing H.S.
Irrigation Areas
Milligan
Range
Carlton
Plain
Carlton Hill
H.S.
Weaber Plain
Keep River Plain
West Arm
WYNDHAM
Stage 1
Development
N.T.
Mantinea Flats
Ivanhoe
Plain
Ivanhoe H.S.
Cotton Ginneries
KUNUNURRA
Cockburn Range
Pentecost River
Diversion Dam
Highway
Packsaddle
Plain
Power Line
Keep River
Newry H.S.
King River
Dam and
Hydro Electric Stn
Spillway
River
Northern
Storage
Reservoir
Dunham River H.S.
Boundary
Lake Argyle
Catchment
Great
Carr Boyd Range
Argyle
Downs
Station
Rosewood H.S.
Dunham
Catchment
Boundary
Lissadell H.S.
0
10
20
30
40
50
Kilometres
Bow River
Behn River

Figure 3.13: Map of part of the East Kimberley region, showing the Ord irrigation project. The main storage, completed in June 1972, is called Lake Argyle. Its waters now cover the homestead of Argyle Downs Station, made famous by the pioneering Durack family

A town is born: farmers become commuters

Where were the new farmers to live? How was the farmer to be assisted to produce a crop without delay? Collect material on the Ord River project; use it to describe the help the government had to give the farmer in the development of his pioneer farm and in the marketing of cotton, which became the main commercial crop.

The farmers, modern pioneers faced with many unfamiliar problems, became commuters. A new town was born—Kununurra (see figures 3.14–3.16). Here, where many services could be provided, the farmers lived, rather than on their holdings. (Compare this scheme with the situation in Vanskhilia village, described on page 6.) Originally, Kununurra was a small community, remote and isolated, but nevertheless it was a far cry from the first homesteads set up by the pioneer pastoralists of the nineteenth century. It was also an expanding community, providing within a very few years a school, a hospital, stores, a bank, a cotton ginnery, a hotel and service stations. The small township, with its curving paved roads, is half

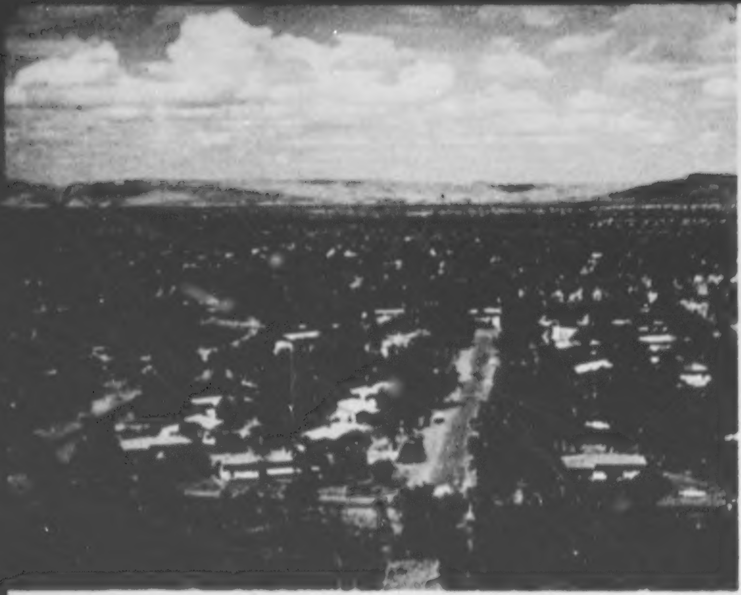


Figure 3.14: Aerial view of Kununurra, 1965—note how small the settlement was, and how orderly the layout was from the start

ORD IRRIGATION AREA

Figure 3.15: The administration block at Kununurra

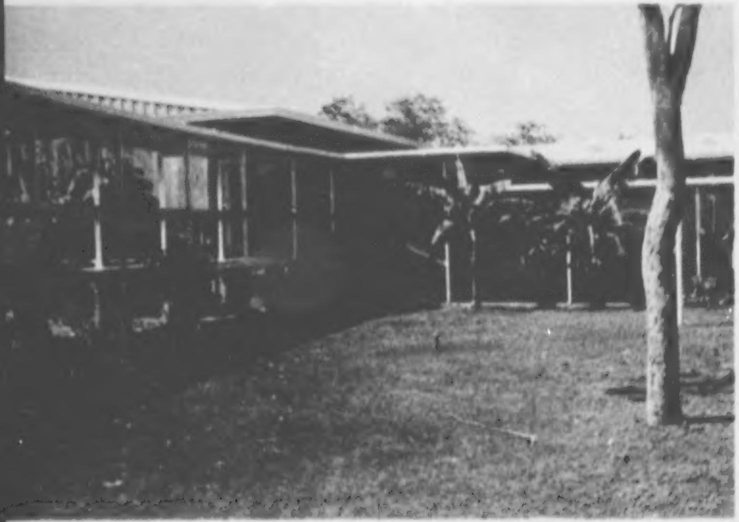


Figure 3.16: The Ord River Club—Kununurra provides far greater facilities for the farmers than would normally be the case in such a small town

Figure 3.17: The main storage reservoir, Lake Argyle, in 1972—what are the advantages of this site for a major dam?

Figure 3.18: The main irrigation channel, leading from the diversion dam to Ivanhoe Plain (see figure 3.13)

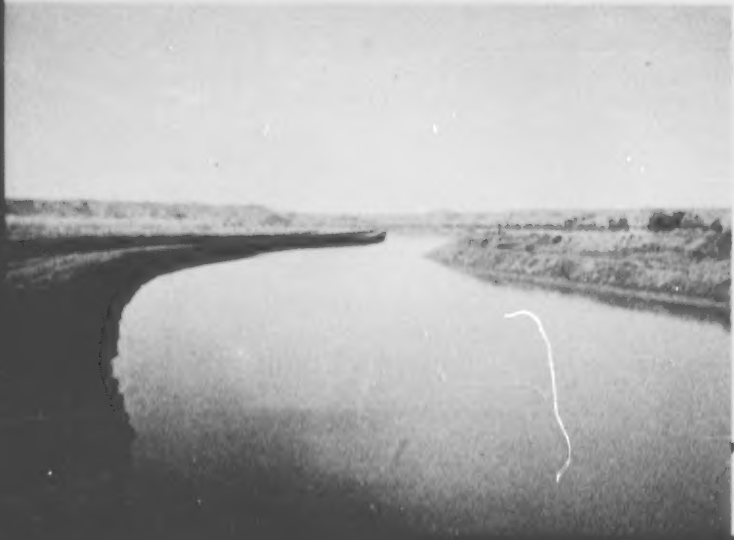


Figure 3.19: Irrigation blocks beside the Ord River, from the air—note their regularity and size

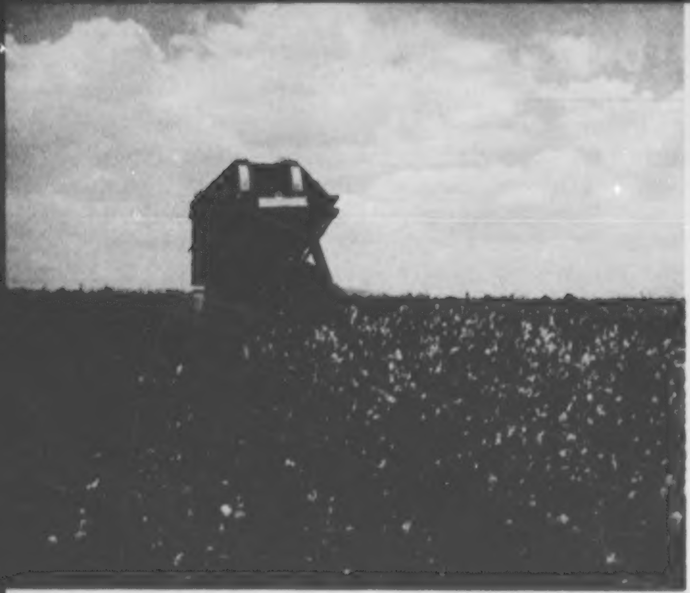


Figure 3.20: A mechanical picker at work in a cotton field at Kununurra

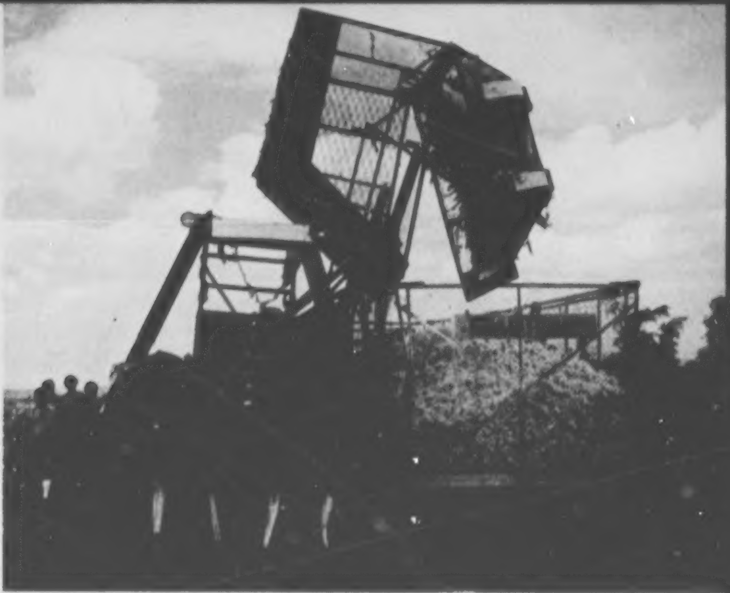


Figure 3.21: A picker unloading into a cotton trailer—what would be the purpose of the twin openings at the front of the machine?

hidden in trees and grass, the latter pale gold and up to three metres high at the end of the 'Wet'.

The port of Wyndham lies 105 kilometres north-west of Kununurra, and the two towns are now connected by an all-weather road. Cotton is exported through the port, and meatworks operate there in the dry season.

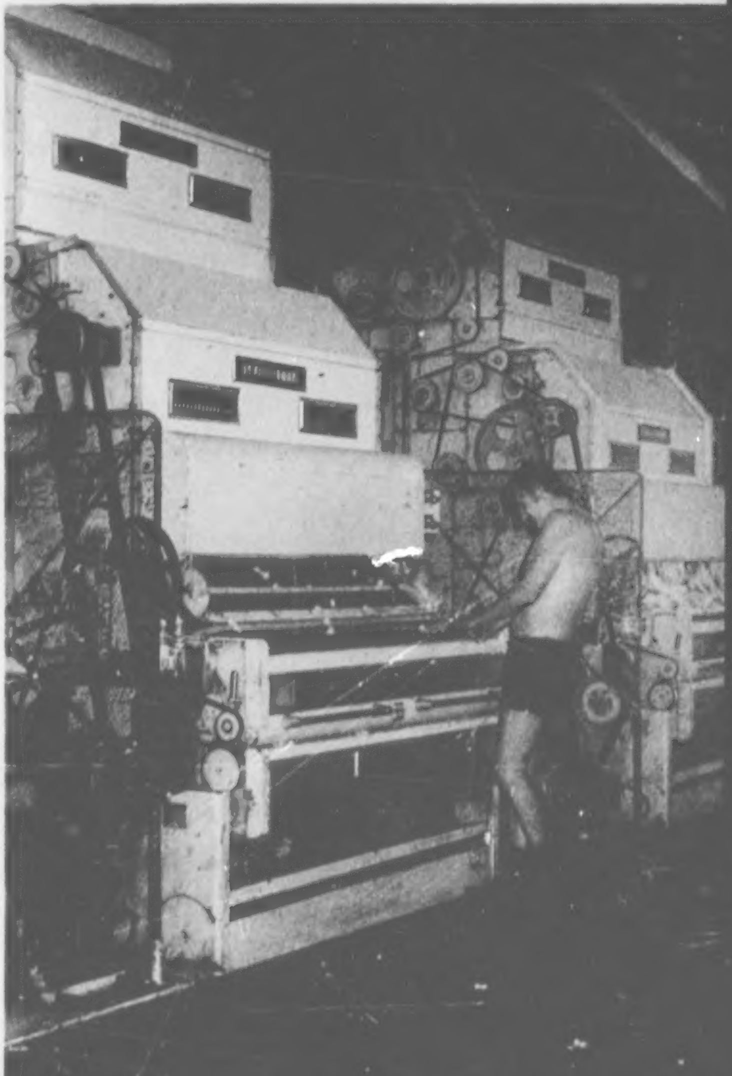
In April 1969, construction of the main storage reservoir was begun, 48 kilometres upstream from the diversion dam. It was completed on time in June 1972, and was named Lake Argyle (figure 3.17). The main function of this major storage is to enable 72 000 hectares of land to be used for irrigated agriculture, and also to keep the diversion dam full so that water can flow into the irrigation channels by gravity (figure 3.18).

In collecting reference material on the Ord River scheme, try to find out the difficulties encountered in the construction of both the diversion dam and the main storage. Problems could have arisen from climate, from remoteness, and from siltation. State the problems, and explain how they were solved.

The extensive farmer

How could the Ord scheme benefit the cattle industry of the Kimberleys? In this connection, the question of larger-scale farming on the irrigated land was raised; in July 1968, a development consortium and the West Australian government announced final agreement on an extensive research and experimental programme to be carried out on a 970-hectare pilot farm in the Ord irrigation area.

Figure 3.22: The cotton ginnery at Kununurra—how is the raw cotton treated here?



The purpose of this programme is to establish whether or not cash crops such as grain sorghum can be grown economically under irrigation, and to study the possible integration of agriculture with the local cattle industry. The consortium comprises Australian, American and Japanese financial interests; its representatives will work in close cooperation with the West Australian Department of Agriculture and CSIRO. If the results of these studies are favourable, large-scale farming may be developed on the irrigated land now that the main storage on the Ord has been completed.

LARGE-SCALE MINING

From the rugged land of the pioneer pastoralists and the neat, cultivated patches of irrigated land, away to the south-west across the harsh, dry, red-brown landscape, more spectacular developments are taking place. Clouds of suffocating brown dust obscure the land, which is being torn up by great machines; roads and railways are being constructed where none existed before. Here are new towns, new people, new ways of dealing with a lonely, isolated dry land. This is mining—not as in the 1880s, when gold was found at Halls Creek, but mining backed by the resources and technical know-how of the 1970s. The key to this dramatic development is iron ore.

In 1894 the West Australian government geologist said: 'Haematite . . . is the commonest occurrence in this colony, but will not pay to work, although there are large bodies of a high class. . . . as iron ores are of no value it is useless to trouble about them.' Today, hundreds of millions of dollars are being invested by companies which are removing iron ore, processing it, and exporting it from Western Australia to countries overseas.

Two islands in Yampi Sound, on the far north-west coast of Western Australia, produce iron ore; in the 1940s, the Broken Hill Proprietary Company began construction of a town and quarrying and

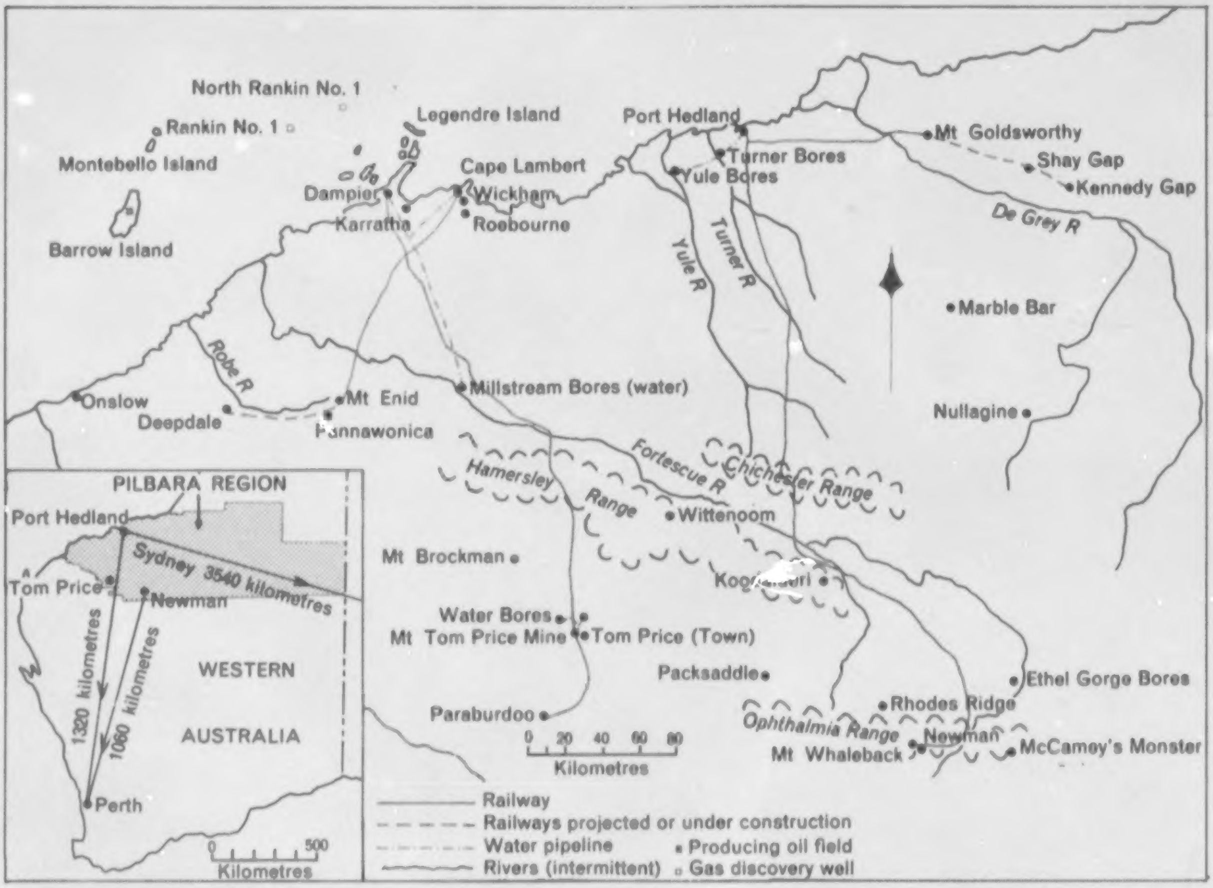

North Rankin No. 1
Rankin No. 1
Legendre Island
Port Hedland
Mt Goldsworthy
Montebello Island
Cape Lambert
Turner Bores
Shay Gap
Yule Bores
Kennedy Gap
Dampier
Wickham
Karratha
Roebourne
De Grey R
Barrow Island
Yule R
Turner R
Marble Bar
Robe R
Millstream Bores (water)
Onslow
Mt Enid
Nullagine
Deepdale
Pannawonica
Fortescue R
Chichester Range
Hamersley
Range
Wittenoom
PILBARA REGION
Port Hedland
Sydney 3540 kilometres
Tom Price
Newman
1320 kilometres
1060 kilometres
WESTERN
AUSTRALIA
Perth
0 500
Kilometres
Mt Brockman
Water Bores
Mt Tom Price Mine
Tom Price (Town)
Packsaddle
Ethel Gorge Bores
Rhodes Ridge
Paraburdoo
Ophthalmia Range
Newman
Mt Whaleback
McCamey's Monster
0 20 40 60 80
Kilometres
Railway
Railways projected or under construction
Water pipeline
Rivers (intermittent)
Producing oil field
Gas discovery well

Figure 3.23: The Pilbara region, 1972. Rail distances: Port Hedland–Mt Whaleback 426 km; Dampier–Mt Tom Price 290 km; Mt Tom Price–Paraburdoo 105 km; Port Hedland–Mt Goldsworthy 113 km

ship-loading facilities at Cockatoo Island. However, in this study we are concerned not with developments at Yampi Sound, but with more recent ones further south on the mainland.

Figure 3.23 shows where the ancient, eroded, arid landscape is being changed so dramatically, by the activity of men and machines. Figures 3.25, 3.27 and 3.26 give some indication of the type of landscape, and reference to figure 3.8 provides a clue to its aridity.

The following outline of the activities of three mining companies gives a brief picture of some of the developments in the Pilbara region since 1960, when the Commonwealth government relaxed restrictions on the overseas export of iron ore.

The first major iron ore project in the Pilbara region was undertaken by Goldsworthy Mining Ltd, which began operating deposits at Mount Goldsworthy; the company invested $75 million in establishing a mine, a crushing and loading plant, a railway running 113 kilometres to Port Hedland, and ship-loading facilities on Finucane Island. Exports began in June 1966. At the mine a new town was constructed, and additional housing was provided adjacent to the shipping berth at Port Hedland. Expansion is continuing at Mount Goldsworthy, and the company is developing further deposits in the locality, particularly at Shay Gap.

Hamersley Iron Pty Ltd controls vast iron ore deposits at Mount Tom Price in the Hamersley Range, and its ambitious, far-reaching programme included the construction of the new port and township of Dampier, 293 kilometres of railway, the new town of Tom Price, and a pelletising plant at Dampier. The project was completed in under twenty months, and the first shipment of ore was made in August 1966. Further expansion plans produced increased output at the Mount Tom Price mine, development of high-grade ore south of Mount Tom Price at Paraburdoo, the laying of a further 105 kilometres of railway to this deposit, expansion of the existing town of Tom Price, and construction of a new town at Paraburdoo.

Mount Newman Iron Ore Co. Ltd is developing ore deposits at Mount Whaleback in the Ophthalmia Range, and a railway of 426 kilometres has been constructed to link the mine with Port Hedland. Something of the effort required for the great changes men and machines have wrought upon this ancient landscape can be gathered from what was achieved in the short space of two years, at a cost of $190 million, by the contractors of the Mount Newman company:

- Construction of the Newman–Port Hedland railway
- Open-cut mine on Mount Whaleback cleared
- The new mining town of Newman built, together with workshops, crushing plant and train-loading plant
- At Port Hedland, a channel and turning basin dredged for giant ore carriers, and 90 hectares reclaimed for train-unloading, crushing, stockpiling, reclaiming and ship-loading installations
- A new suburb developed at Port Hedland.

Figure 3.24: Ore being loaded into a 100-tonne truck at Mount Tom Price (Hamersley Iron Pty Ltd)

[illegible] Pty Ltd

[illegible] Pty Ltd

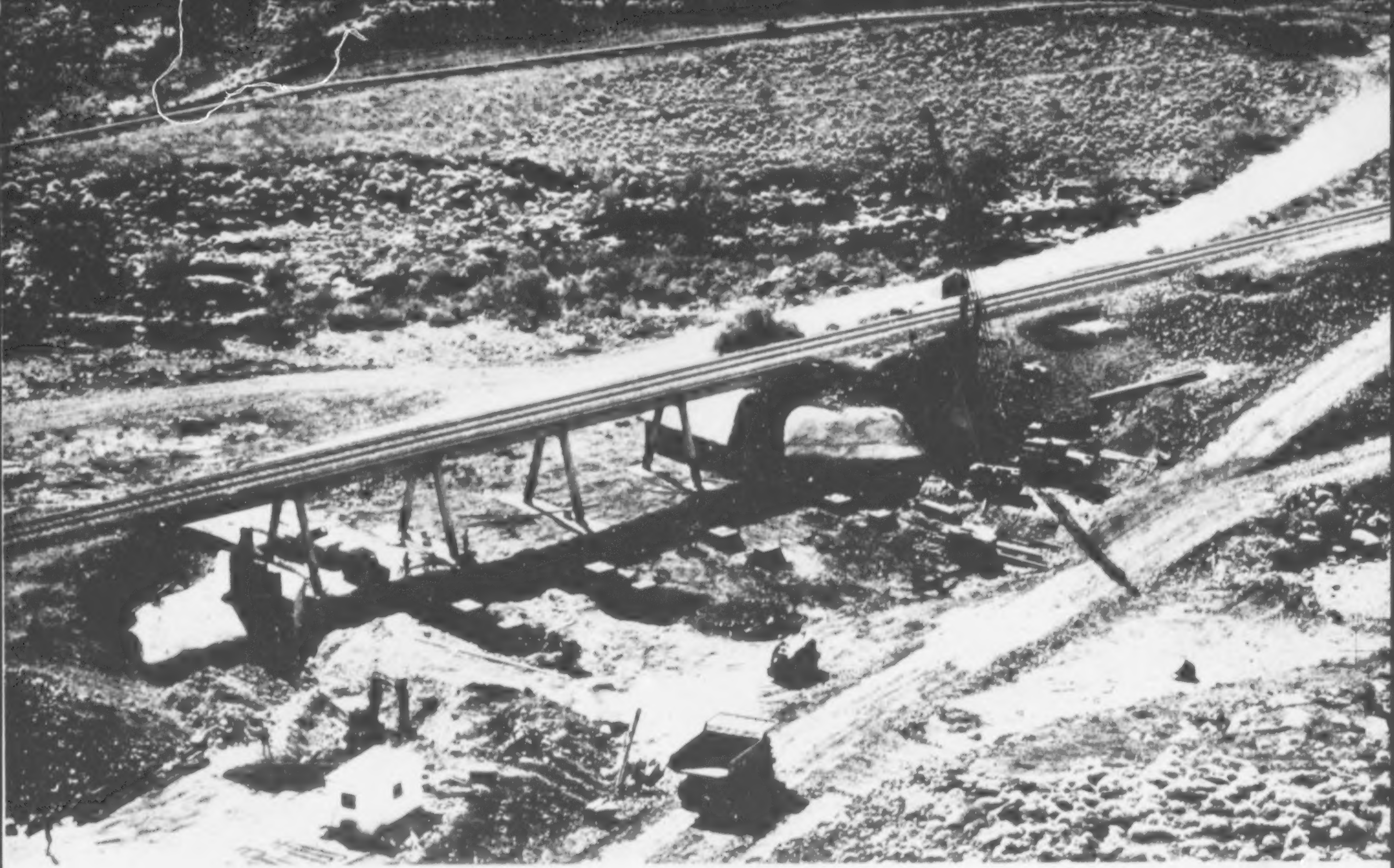
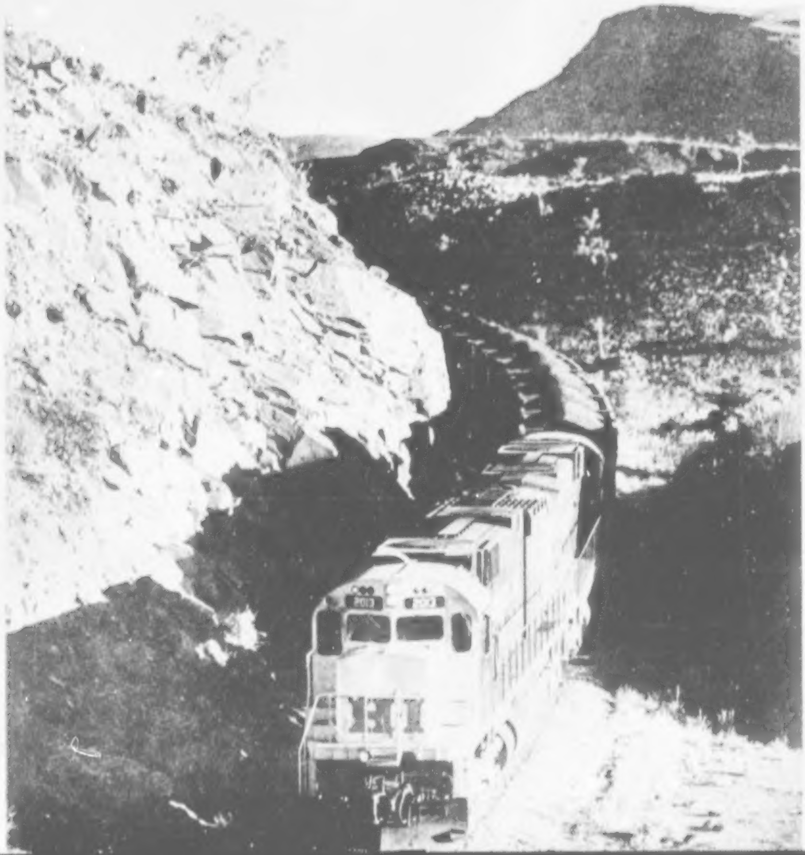


Figure 3.27 Railway construction in progress in the Pilbara region—what could be the purpose of the pipeline in the background? **(Hamersley Iron Pty Ltd)**

Figure 3.28 A trainload of Mount Tom Price ore heads for Dampier



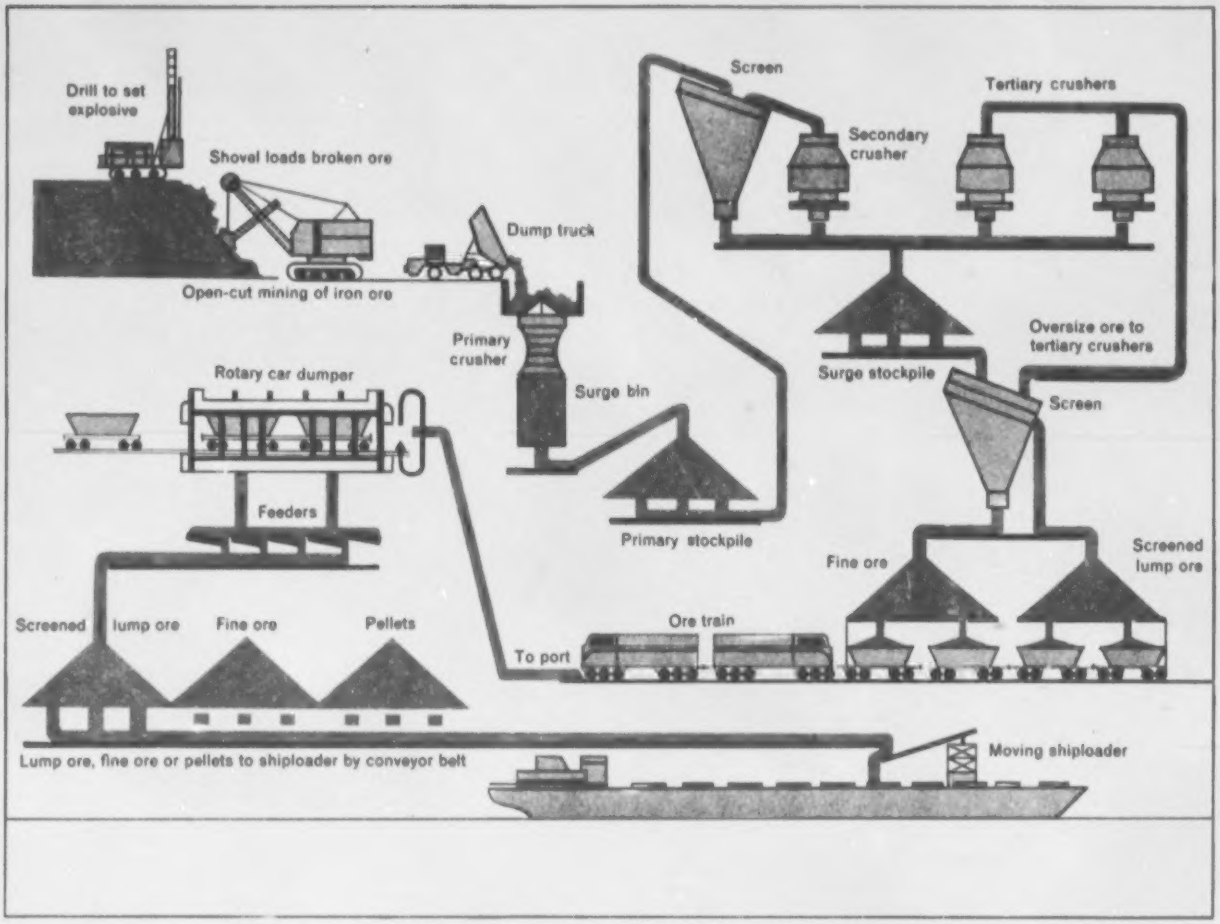

Drill to set explosive
Shovel loads broken ore
Open-cut mining of iron ore
Dump truck
Primary crusher
Surge bin
Primary stockpile
Screen
Secondary crusher
Tertiary crushers
Surge stockpile
Oversize ore to tertiary crushers
Screen
Fine ore
Screened lump ore
Ore train
To port
Rotary car dumper
Feeders
Screened lump ore
Fine ore
Pellets
Lump ore, fine ore or pellets to shiploader by conveyor belt
Moving shiploader

Figure 3.29: Stages in the mining, processing and transport of iron ore

Figure 3.29 shows the series of operations involved in iron ore production, from the open-cut mine at Mount Tom Price to the bulk ore carrier at Port Hedland.

Trains over one kilometre long now carry more than 500 000 tonnes of ore each month from Mount Tom Price to Port Hedland, and planning goes ahead for increasing the output of ore and facilities to deal with it. In 1972, Port Hedland was Australia's biggest export port in terms of tonnage handled, and was able to berth bigger ships than could be accommodated by the wharves of Sydney harbour.

Creating new towns in an empty land

Figure 3.30 is a diagrammatic layout of the new mining town of Paraburdoo (see figure 3.23 for its location). Study the map and suggest reasons for the position of the shopping centre, the school, the hotel-motel, and the hospital. Where would you put the recreation club?

Given the following information, plan the facilities you consider necessary for the people who will live there.

Information for the planner

- Distance from Perth: Dampier about 1730 kilometres from Perth by road; Paraburdoo 395 kilometres by rail from Dampier
- Population: about 3000 people to be catered for when production begins at mine (eventual population expected to be about 7500)
- Average age of population: 28 years
- Large proportion of population under 8 years of age
- High temperatures most of the year; rainfall low and erratic
- Tropical cyclones possible from November to May.

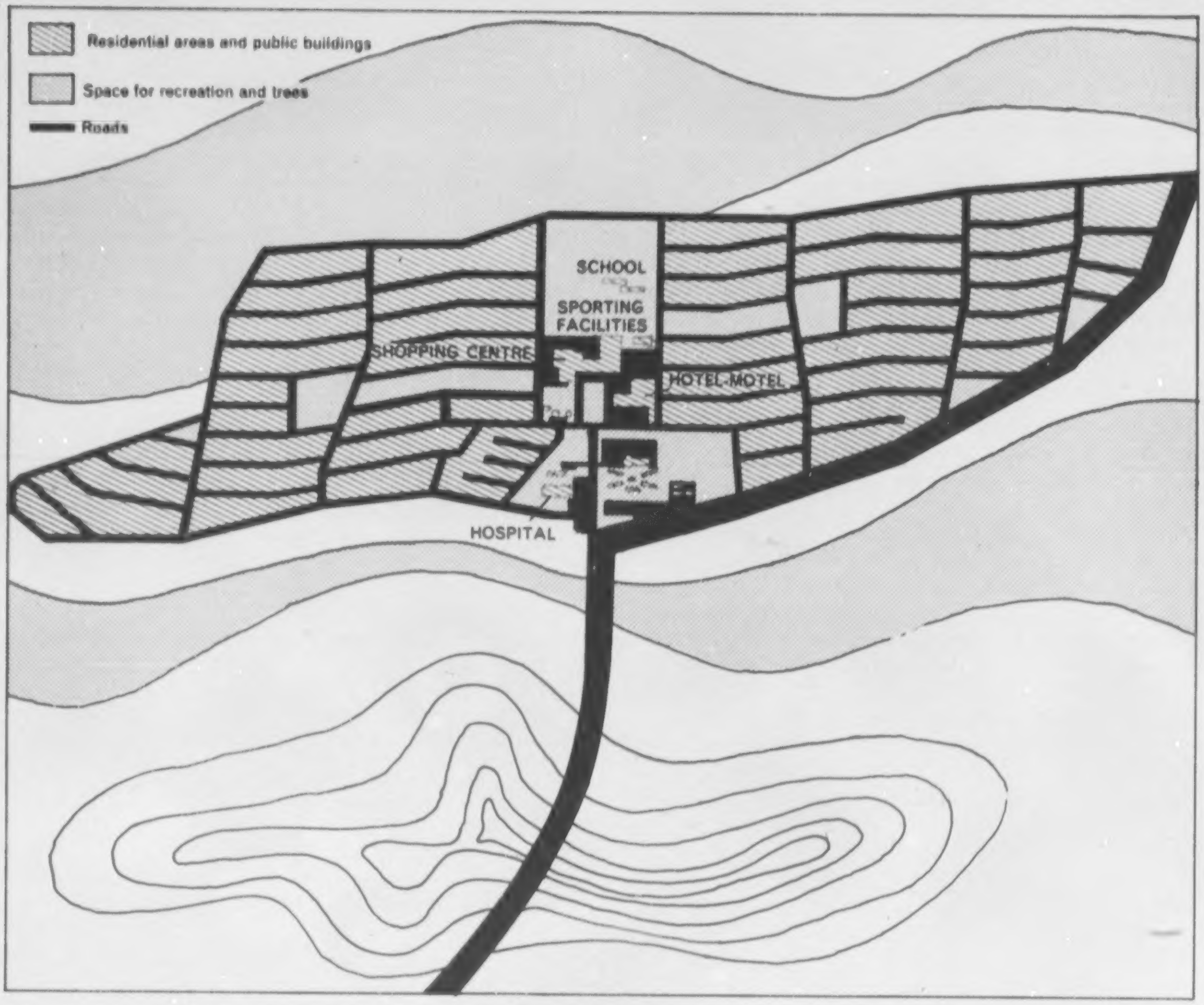

▨ Residential areas and public buildings
▨ Space for recreation and trees
Roads
SCHOOL
SPORTING FACILITIES
SHOPPING CENTRE
HOTEL-MOTEL
HOSPITAL

Figure 3.30: Diagrammatic plan of the new mining township of Paraburdoo

Now see how the details of your proposals compare with the information in the following text; this consists of extracts from a letter written in 1971 by the wife of a mining engineer living at Tom Price township, 105 kilometres by rail from Paraburdoo.

Here at Tom Price we have families from many countries, including Great Britain and Ireland, New Zealand, Canada, U.S.A., Holland, Germany, France, Hungary, Norway, Sweden, Iceland, Italy, India, Malaysia and South Africa. I believe that less than 50 per cent of the total population is Australian. As well as the townspeople, there are several hundred people living in three camps and a caravan park within a few miles of Tom Price. These people are mainly men employed by contractors working at the mine or building the new railway to Paraburdoo 55 miles away. Some of these men have their families with them and they live an extremely hard life in caravans. Many of the men employed on the railway are the very colourful native Thursday Islanders.

The houses, supplied by Hamersley Iron Pty Ltd, are very comfortable and spacious. They are all of brick veneer; some have terracotta roof tiles, others have a special aluminium roof tile. The interior walls are prefabricated. There are several house designs available, with three or four bedrooms. (Houses are allocated on the basis of the number of children per family—families with four or more children are accommodated in four-bedroomed houses.) All homes are fully air-conditioned (an absolute necessity, as far as I am concerned!). . . . The town has a sewage disposal and treatment system, and treated sewage is reticulated back to the oval and community gardens. The houses are all fully furnished and include a refrigerator, stove and washing machine. . . . This accommodation is provided at a nominal rental of $6·00 per week.

As the town grows older, more and more gardens are being established—lawn seed is provided free, and shrubs and trees are available at a cost of 20 cents each. These are supplied by the extensive local nursery, and gardening advice is freely given by the nurserymen and gardeners. Our streets are all sealed and we have concrete kerbing and driveways. The main thoroughfares are tree-lined, and are watered from the reticulation system. Building of houses is still progressing in the northern area of the town.

Our water was originally supplied from artesian bores near Tom Price and we had severe water restrictions. However, a pipeline, 35 miles long, was completed from the underground Fortescue River Basin recently, so that water is more plentiful and the severe restrictions have been lifted....

We have an all-electric power supply. The town has its own diesel-generator powerhouse, and all electricity to the mine and township comes from here. In the newer sections of the town all power and telephone cables are underground.

The town is administered from the township office by the Township Supervisor. As Tom Price is a 'closed' company town, we do not have the usual local government authority or council. Government matters are dealt with by the Wittenoom shire clerk, who comes 70 miles each fortnight to register cars, dogs and suchlike. There are only a few people in the town not employed by Hamersley Iron; they include the bank manager and his staff, the headmaster and his staff, the policemen (three), MacRobertson Miller Airways officials, the ministers of religion and the managers of the shops and hotel.

There are most recreational facilities available.... We have a low-powered TV broadcasting system which has been operating for three or four months. Programme tapes are sent up from Perth and screened the next day.... It was thought that the advent of TV would adversely affect the marvellous community spirit in the town, but these fears seem to have been unfounded.

We have a large, beautifully grassed football and cricket oval, a fine bowling green, a squash and several tennis courts, and an Olympic swimming pool staffed by a fully qualified swimming instructor and lifesaver. During the holidays, free tuition in swimming and tennis is available to the children from voluntary workers.

We have an excellent community centre, incorporating a large hall with stage for various functions (concerts, balls, dances, yearly visits from the W.A. Ballet Company, the W.A. Opera Company, and other groups . . .), an extensive library, well stocked with books from the W.A. Library Service, a billiard room, and a 'meeting room' where the various local committees hold their meetings.... We also have a well-patronised drive-in and open-air picture theatre....

We have several shops in the town now. When we first arrived two years ago, the shopping was extremely limited, with only one store, which included the post office! However, during the last ten months the store or supermarket has been extensively altered and enlarged, a post office, dress shop, chemist, stationery shop and snack bar have opened, and a hardware shop is soon to be opened. Most items are available, although the range is fairly limited. We often use catalogue and mail order facilities provided by the larger Perth stores....

I send to Perth once a fortnight and have my meat, fruit and vegetables sent up on the huge refrigerated trucks which service the towns of the north-west. (These trucks bring fresh fruit, vegetables and meat to the store once a week.) I find this to be a satisfactory arrangement, as I feel that the quality of my goods is superior to that available in the store, and the cost is comparable even though I have to pay the freight on my goods. I buy my general grocery items at the store....

We feel that we lead a very interesting and satisfactory life in Tom Price. We certainly lead a far busier social life here; people seem to do a lot of home entertaining—parties, dinners, barbecues, etc.—and there are always locally organised fund-raising functions to attend....

We find that we cope quite well with the heat—this is very intense from December until April, and only the air-conditioning makes life bearable. However, the children seem to adapt readily to this heat and spend much time out of doors. During this period we experience some tropical rain, as we are on the edge of the monsoon area. We also experience cyclonic conditions at this time. For the remainder of the year, the weather is very pleasant—hot days and cool evenings and nights during the almost non-existent winter months.

We are plagued with flies, unfortunately, although they don't come in in hordes to the cooler atmosphere of the houses. The children become so accustomed to them that they don't always brush them away from their eyes, and consequently there is quite a high incidence of eye infection here. In our situation we are not unduly bothered with the dust. Gardens are fairly well established now, and the town is surrounded by bush—native trees and shrubs and spinifex. As the mine is 6 miles away we are not worried by the considerable dust from the operation. We do get frequent 'willy-willies', some extremely thick, and the children race indoors when one approaches. To be caught in one is quite a frightening experience.

Since our arrival here we have experienced only one real cyclone alert—we get ample warning and the town is prepared to withstand the winds and rain quite effectively. We receive 72, 48 and 24-hour warnings. During the 24-hour alert, we have to fill the bath, wash trough and washing machine with water (in case of failure of supply). We all stock up with ample supplies of drygoods, tinned food, etc. and cooked meat to be eaten cold. We have supplies of candles (in case of power failure) and generally feel quite prepared....

We have an Emergency Fire Service. The company employs a fire officer, and he is assisted by a group of voluntary fire fighters. We have two modern fire tenders (a joy to the small boys in town!!).

We have a very satisfactory medical service here now. We have a modern, well-equipped, twenty-bed hospital, staffed by two doctors, a matron, several nursing sisters and nurses' aides. The Royal Flying Doctor Service, based at Port Hedland, is available for emergency evacuation to Perth....

The education facilities are fairly satisfactory. We have two schools (not air-conditioned)—one primary, and the other a newly opened high school to W.A. Junior level. Many parents prefer to send their children to school in Perth once they reach secondary level. . . .

We are served by a daily commercial air service to and from Perth, but during and after heavy rain the airstrip is closed and we are cut off. Last May, the strip was closed for twelve days and we went without mail and newspapers for this time. The northern roads are also cut during heavy rain and this is when we really feel our isolation. This isolation is the one thing that many people are unable to cope with, and I feel that it is quite vital to leave the area at least once a year, to 'get back to civilisation'.

New ties with the outside world

Where does the capital come from which enables men to move mountains, construct hundreds of kilometres of railway, establish new towns with all the facilities needed by the families who come to live there, change unpromising ports into ones that can handle giant bulk-ore carriers, and establish water supplies in an area where rainfall is low and erratic?

And where do all the millions of tonnes of iron ore go to? Who are the customers? The problems of distance and markets here are different indeed from those of the pastoralist and the cotton farmer in the Kimberleys.

A contrast

In caves, on rocks and on trees in the Kimberleys can still be seen the pictorial records made by the early inhabitants of this unpromising land. These ancient hunters sought to portray aspects of their life, both material and spiritual, in splendid drawings and carvings. This was an imaginative reaching out to the unknown, a way of linking themselves with the 'dream-time' which was an essential part of their culture.

What a contrast between the symbols depicted by the Aboriginal artists and the strange erections that can be seen today near Carnarvon and Exmouth. The Carnarvon Space Tracking Station played an important part in the landing of the first men on the moon in July 1969. It is a symbol also, indicating man's attempt to reach out into further unknowns, this time the unknown of space.

FURTHER ACTIVITIES

Write a short essay to show the different types of change involved in the Amul Dairy scheme and the Ord River project. Make use of the following headings:

- Aims of the schemes
- How they started
- Assistance needed
- Problems overcome
- Products and markets
- Merits of each scheme

4

Change through scientific research: The Esperance district of Western Australia

In 1957 Mr Wuttrich, a farmer in Central Gippsland in Victoria, sold his farm and purchased land in the Esperance district of Western Australia; here, for over a hundred years, settlers had tried to make a living and most had failed.

It was a good farm that he sold, with rich river flats, a steep flat-topped hill, a comfortable old house, a lovely garden, and rows of magnificent trees planted half a century earlier by his father. He had a dairy herd and a contract to supply milk for Melbourne. You may think he was quite foolish to move from his Gippsland farm—so did many of his friends.

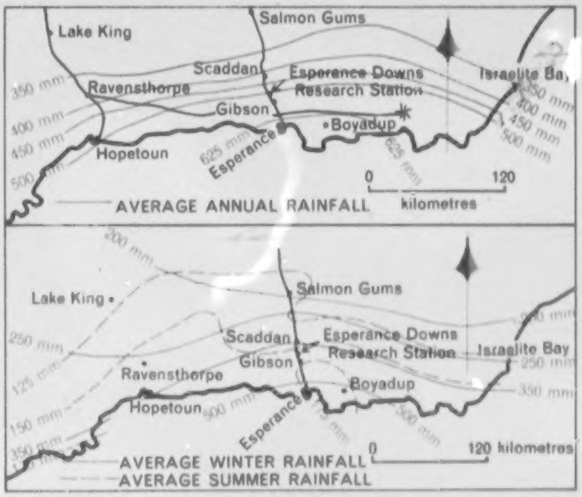
The land the farmer had allocated to him in Western Australia was 600 hectares in area, and lay 67 kilometres west of Esperance, which you will find marked in your atlas. Esperance Bay was named in 1792 by D'Entrecasteaux, the French explorer. The first settlers were the Dempster brothers, who came to the area in 1863; they had leased more than 163 000 hectares by 1866, and in one year sheared more than 32 000 sheep. (On average, how many hectares of land were needed for each sheep?)

In 1893, Esperance was established as the port for the Coolgardie goldfields, but the town declined when a railway line was built from Perth to Kalgoorlie in 1897 and extended south to Norseman in 1909. After a line from Norseman to Esperance was completed in 1927, Esperance again prospered for a time as the wheat port for the inland

Figure 4.1: Mr and Mrs Wuttrich inspect the native scrub on their farm—the large bush is called a 'chittick'

Figure 4.2: Mallee gums (W.A. Department of Agriculture)

Figure 4.3: Esperance Downs—rainfall



Lake King
Salmon Gums
Scaddan
Esperance Downs Research Station
Israelite Bay
Ravensthorpe
Gibson
Boyadup
Hopetoun
Esperance
350 mm
400 mm
450 mm
500 mm
625 mm
0
120
kilometres
AVERAGE ANNUAL RAINFALL
200 mm
250 mm
125 mm
150 mm
500 mm
350 mm
120 kilometres
AVERAGE WINTER RAINFALL
AVERAGE SUMMER RAINFALL

mallee country, but when the wheat farms failed in the 1930s the port once more fell into decline. Look at the maps in your atlas. What goods would be carried along the railway line to Esperance?

Until the end of World War II, agriculture on the Esperance Downs remained undeveloped. In 1916 the Agricultural Bank had declared that the area was unsuitable for small farms. A few farmers were growing pasture for their sheep—mainly well inland from the coast—but most let their holdings revert to bushland. A large pine plantation was tried in one place—it failed. It was certainly not a very promising area in which to buy a farm!

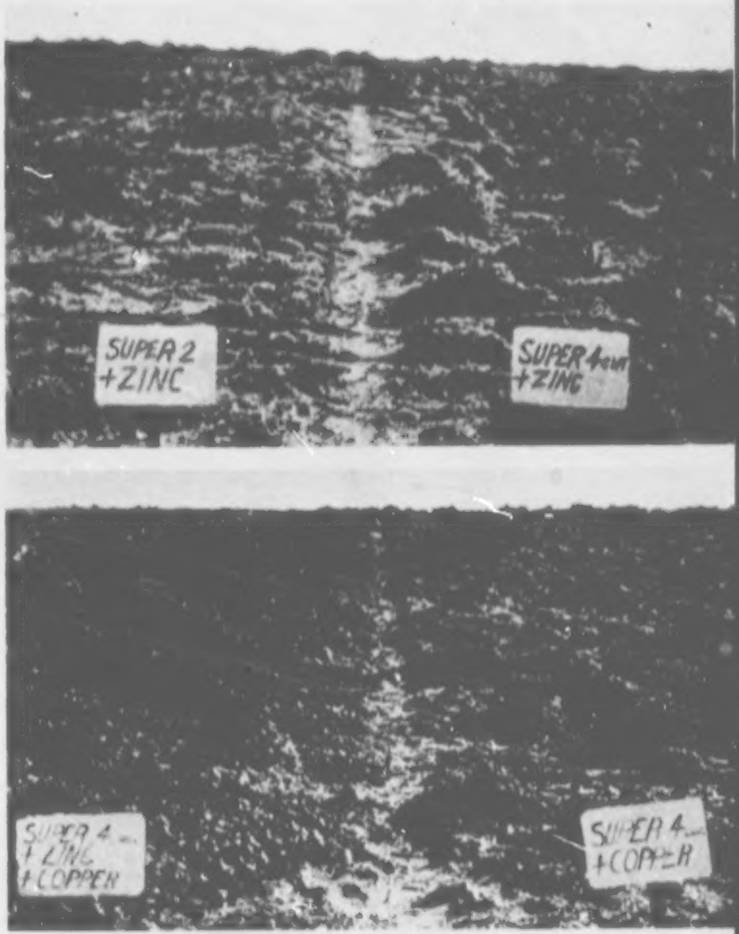
However, in 1949 something happened which changed the situation—the establishment of a research station near Esperance. There were some strange things about the coastlands. As figure 4.1 shows, the natural vegetation consists of a heath type of very low-growing bushes; there are no large trees. As we move inland we come to various forms of mallee gums, rather stunted trees (figure 4.2). Now look at the annual rainfall map in figure 4.3, and see which areas receive most rain.

Trees are usually more common in areas of greater total rainfall, so there must be something else which explains the absence of trees in the area near the coast. Perhaps the summers are too dry and hot. Look at the map of winter and summer rainfall in figure 4.3. Which is the wetter half of the year? Is the other half quite dry? What proportion of rainfall falls in the two seasons?

Summers are cooler on the coast than in inland areas; for example, the average maximum temperature of the hottest month is 25°C at Esperance, 30°C at Salmon Gums (about 100 kilometres inland), and 34°C at Kalgoorlie (350 kilometres inland). This means that less water would evaporate near the coast than inland, and the coastal areas would have a more favourable growing season.

Make a diagram to show the changes in summer temperature, summer rainfall and vegetation as the distance increases inland from the coast.

It seems that the low, scrubby vegetation near the coast was not caused by the rainfall, temperature, or rate of evaporation. Some early farmers had used superphosphates on their land and this had improved their pastures; but still something was lacking. Plants need many minerals if they are to grow strongly, and some of these minerals are needed in such tiny quantities that they are called 'trace elements'. At the Esperance Downs Research Station, the scientists tried out various trace elements and other minerals on small plots of land, to see which ones would make pastures grow best.



Figures 4.4 and 4.5: Two of the first experiments on the Esperance Downs Research Station—the photographs were taken in 1951, and show second-year subterranean clover pasture. The plants on the right- and left-hand sides of each photograph have been treated with different quantities or different kinds of trace elements. **(W.A. Department of Agriculture)**

Look at figures 4.4 and 4.5, which show some of these plots in 1951. The clumps are subterranean clover plants. What conclusion can you draw from figure 4.4? What conclusion can you draw from figure 4.5?

As a result of these experiments, the scientists discovered that the only plants which grew naturally near the coast were ones which did not need phosporus, zinc or copper. This was a big breakthrough. The scientists found that if they used 168 kg of superphosphate, 33·6 kg of copper ore and 3·4 kg of zinc oxide per hectare, good crops and pasture could be grown. These compounds can be bought fairly cheaply.

However, the soil was also found to be deficient in nitrogen. There are two ways of building up nitrogen in the soil: one is to put it on in the form of artificial fertiliser, but this is far too expensive for the farmer; the other way is to grow plants which take nitrogen from the air and form nodules of nitrogenous compounds on their roots, introducing the nitrogen that they do not use themselves into the soil when they die. None of the native plants had this ability, so more research went into finding the best plants to grow and the best method of growing them. Subterranean clover was found to be most suitable in this respect, but clover on its own is not satisfactory for animal fodder; the experimenters found that when Wimmera ryegrass was planted along with clover, the two together produced a pasture which lasted many years without having to be sown again (although in the wetter, sandier areas further south, it has to be replanted more frequently).

The research station then had to find the best method of clearing the land and preparing the ground for farming. It is important to get rid of all the natural vegetation from the paddocks that are to grow pasture. It was discovered that this was best done by flattening the native scrub in later winter or early summer, and then burning the dead vegetation in the following autumn; the soil must then be ploughed in winter to a depth of 10 to 12 centimetres to turn over all the roots, and left fallow for the roots to decay. If the vegetation is dense, the ploughing and fallowing must be done several times; sometimes the roots are raked up, instead of repeating this process. Some farmers, including one large American development company, ignored this advice and their pasture was poor as a result.

Another research project concerned the crops that might be grown, and the effect of these on the pasture. Around the Esperance Downs Research Station it takes two years before a pasture is established, and another year before sheep will have produced wool which can be sold, so it would be very helpful to the farmer if a cereal 'cover crop' could be sown at the same time as pasture, to bring in some money more quickly to help pay for development costs. The scientists discovered that it was risky to depend on the returns from such crops, because yields varied according to climate. If the growing season is wet, rust infection may develop in the wheat and barley. If it is dry, the clover pasture beneath the cover crop may not seed properly and will have to be resown. Over the period 1950–55, under experimental conditions on the research station, the yields of wheat varied from 400 to 1080 kilograms per hectare, of barley from 225 to 1020 kg/ha, and of oats from 345 to 1050 kg/ha. This information was passed on to the farmers. Nearer the coast it was found that clover had to be grown for at least five years before the soil was rich enough for crops to be cultivated.

Therefore, by the time large numbers of farmers began to apply for land in the district, there was a good deal of scientific knowledge on which they could draw, as a result of the experiments carried out at the research station. Without this modern knowledge, the Esperance area would still be largely undeveloped. (Make your own list of the things which were found out about the Esperance district, and the ways of making the area productive.) Nevertheless, there are still more things to find out, especially the effects of different pastures on sheep.

Now let us return to the farmer who sold his land in Gippsland. Mr Wuttrich became interested in the developments in the Esperance district through a radio talk which was given just at the time when his Gippsland river flats were flooded, and he had been wading waist-deep in water to tend his cows. He made inquiries, applied for land, and was allocated a block at the end of 1956, 67 kilometres along the Ravensthorpe road west from Esperance.

After selling his farm in Victoria, Mr Wuttrich and his wife, their son aged three and a daughter aged eighteen months set off in their car and caravan, with a truck and trailer loaded with household goods, a cultivator, and materials for a shed (see figures 4.6 and 4.7). When, in mid-1957, he drove into the Esperance district and saw some patches of clover 15 centimetres high along the roadside, he was sure the land had a future. Finally, the family reached Lot 1552 and built a large shed with living quarters attached, in which they were to live for ten years (figures 4.8 and 4.9). During that time, two more children were born.

When the Wuttrichs first arrived, all they had was 600 hectares of virgin bush; their only communication with the outside world was a gravel road 5 kilometres from the block; there was no telephone, no store, no school closer than Esperance, 67 kilometres away. They used the Royal Flying Doctor Service radio for years. In 1960 another 600 hectares was added to the farm.

It is a very expensive business to change virgin bushland into a productive farm. Some of Mr Wuttrich's expenses are set out in table 4.1.

If we add up these costs, and also include the cost of seed, fuel, fertiliser, labour and some living allowance in return for the farmer's work, we find

Figure 4.6: The Wuttrich family on their long drive from Victoria to Western Australia

Figure 4.7: Two kilometres from their new block of land, the Wuttrichs' truck was bogged and they had to camp for ten days before someone could be found to tow them out

Figure 4.8: The caravan and living quarters at the back of the shed, in which the family lived for ten years

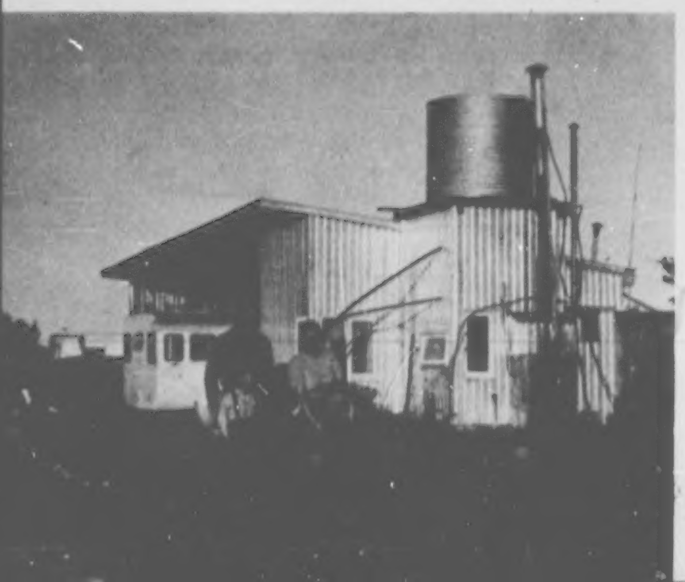


Figure 4.9: The storage area for vehicles and machinery (the position of the living quarters at the rear of the shed is indicated by the water tank)

that about $10 000 was spent every year for ten years in developing the farm. The land was cheap —the first 600 hectare block cost about 85 cents per hectare, and the second cost about $2·80 per hectare. If Mr Wuttrich wished to sell his property, what price per hectare would he need to get to cover the costs of developing the farm?

Table 4.1: Expenditure on equipment, improvements and stock

Item	Approx. cost at time of purchase	Notes
Harvey disc cultivators	$500	Too small, but still used for some jobs
Fordson tractor	$2 400	Traded later for an MF 65, and then for an MF 165 tractor in 1967
Welded railway lines and chains	$100	Home made: to break down scrub
Chamberlain 14-disc plough	$1 300	Still used
Massey Ferguson 24-run disc drill	$1 500	Still used
Hay rake	$600	To rake roots, hay, clover seed
Dump rake	$500	To rake roots; later sold
Shearing shed (15 metre x 9 metre), with yards and equipment	$4 900	
Shed (12 metre x 18 metre)	$10 000	Used for machinery and living until 1967
23 kilometres of fencing	$7 000	Materials only
Water bore	$560	Yields 1350 litres per day
2 dams	$800	Each holds 5450 litres
1 x 6900 cubic metre dam	$1 950	Holds 13 500 litres
7 soaks	$350	
Sheep	$5 600 $4 180	500 ewes in 1961 Stud ewes in 1967

Table 4.2: Costs of fuel, fertiliser and chemicals, 1959–68

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Hectares of pasture fertilised	182	324	482	482	n.a.	448	549	486	688	263
Superphosphate used (tonnes)	38	53	65	82	70	80	81	85	130	40
Cost of fertiliser ($)	1 484	2 446	2 360	2 330	1 400	1 500	1 322	1 649	2 650	900
Cost of chemicals ($)	—	—	—	—	60	100	100	200	120	200
Cost of fuel ($)	240	338	300	420	460	520	600	750	800	800

Now that the farm is developed, seed is usually grown on the farm and the sheep are bred there, so that the main costs are for fuel, fertilisers, and chemicals to control pests and diseases. These are shown in table 4.2.

From table 4.2, work out the rate at which fertiliser is applied. In 1963, a bulk supply of fertiliser was set up at Esperance to replace the bagged supply previously obtained from Perth. What effect did this have on cost per tonne? Note the steady rise in the fuel bill. Would this have been mainly due to rising prices of oil, or to extra work on the farm?

Most of the work of developing the farm was done by Mr Wuttrich. In this way he saved a great deal of money; the Western Australian Department of Agriculture estimated that labour would cost about $42 per hectare if a farmer employed men to develop his farm. Mr Wuttrich pays more for casual and seasonal labour now that his farm is developed, particularly for harvesting seed and shearing sheep. When he employs tradesmen who have to come from Esperance, they charge $36 a day (including a travelling charge of 12 cents per kilometre both ways for the trip).

A farmer who needs to borrow money to develop his farm has to pay 6 per cent interest, and from 7 to 14 per cent for money to buy machinery, depending on where he borrows the money. How does this borrowing affect a farmer's yearly costs of running his farm?

Table 4.3 shows the rate at which Mr Wuttrich's farm was developed and brought into production.

What was the first year in which there was something to sell? Draw graphs, all on the same sheet, to show the developments in area of pasture, the number of sheep, and the production of wool.

Work out the stocking rate for each year, i.e. the number of sheep per hectare of pasture. What has been the trend in the stocking rate? How can you explain it? Explain how this trend is shown on the graph you have made. Why did the stocking rate drop in 1967? Compare Mr Wuttrich's stocking rate with the stocking rate of the Dempster brothers (page 72). Why are they different?

Now compare the graph showing the number of sheep with the graph of wool production. In what ways are they different? What do you think might have been the cause of the difference?

Mr Wuttrich made the following notes on the weather in March each year. They may help you to answer the last question.

1959–60:	Normal season
1960–61:	Dry spring and summer; some useful autumn rain
1961–62:	Rain much below average since August 1961
1962–63:	Dry year
1963–64:	Year very dry; little spring rain, no summer rains of use, total down 75 mm to 460 mm
1964–65:	Another dry summer—only 6 mm rain since December, very light falls October, November, December
1965–66:	Dry—sheep losses due to shortage of feed
1966–67:	Good year—heavy rains June, September, March; dry from December to mid-March
1967–68:	—
1968–69:	Good rains

Table 4.3: Farm development, 1957–69

Year	Hectares logged and burnt	Hectares ploughed	Hectares of pasture	Number of sheep	Wool produced (kg)	Hectares of crop
1957	182					
1958	142	182	182			
1959	162	142				
1960		162	324	503	1 865	
1961			486	1 058	5 670	
1962	364		482	1 414	5 715	
1963			482	1 840	7 044	24
1964			448	2 330	9 280	59
1965	106		468	2 627	10 324	81
1966			486	3 058	13 766	
1967			688	3 594	17 111	
1968			672	4 190	18 406	16
1969			628	4 369	15 567	81

1969–70: Drought conditions—lighter wool cuts, ruined crops, and lack of clover seed for harvesting

In which part of the year does low rainfall seem to have the worst effect? Try to work out why this is so.

In view of the preceding notes on the weather, do you think a farmer would be wise to go by *average* rainfall figures alone when deciding to buy a farm? What else would he need to know?

If you look back to table 4.3, you will see that Mr Wuttrich has never planted very much land in crops. He has planted barley, oats, linseed, sorghum and safflower with varying results. Crops in his area are never sown on new land; pasture may be ploughed up and used for crops for three to five years, or crops may be grown in regular rotation with pasture.

What would the farmer have to take into account in deciding whether to plough up pasture and plant crops? Make out a balance sheet of the losses and costs on one side, and the probable gains on the other. (You should be able to put down the items, but perhaps not all the figures.) What factors could make the farmer's actual balance sheet at the end of the year different from the probable one he drew up when deciding to plant the crop?

When you look at the areas of pasture and cropland listed in table 4.3, you can see that at no time do they add up to the 1200 hectares total area of the farm. Apart from the land in active use, about one-third of the farm has been left in its natural state, and the balance is in fallow (being prepared for crops, or prepared for sowing with new pasture). Some of the one-third which has been left is swamp, some is covered with banksia trees (see figure 4.12) which grow where the sand is too deep for farming, and some areas have been left as shelter belts. Make a list of the benefits to be derived from leaving plenty of native bushland. Look closely at the illustrations, particularly figures 4.11 and 4.14, to see some of them.

Figure 4.10: A group of rams at the sheep yards

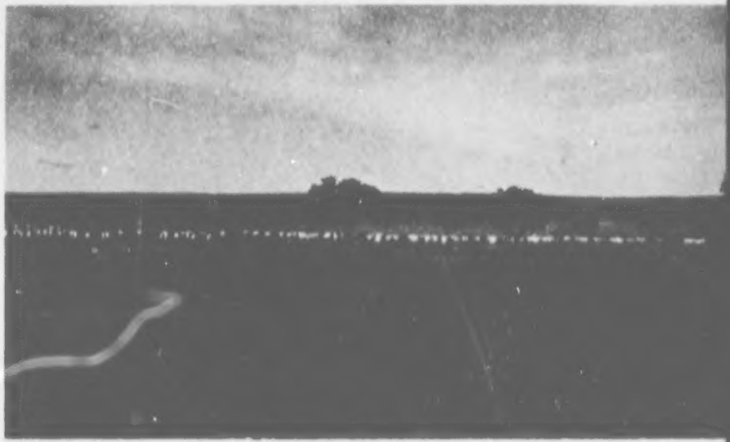


Figure 4.11: Sheep at pasture, with native trees left for shelter—compare with figure 4.1 to see the changes made in fourteen years

Figure 4.12: Native vegetation on an area of deep sand, left uncleared—pasture development is difficult in such areas. Note the banksia tree, only found where the surface sand is deeper than 90 centimetres. ***(W.A. Department of Agriculture)***

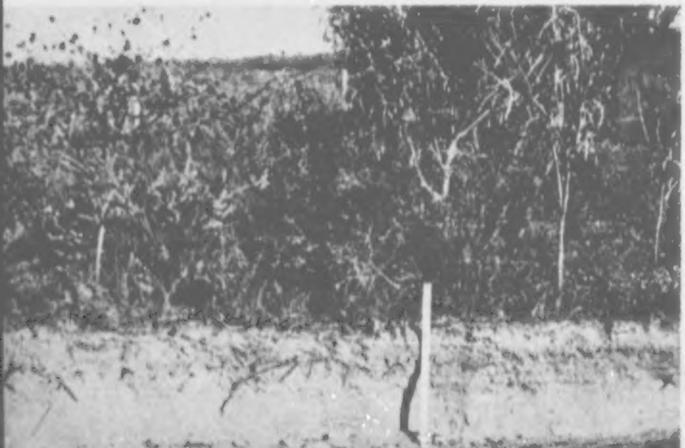


Figure 4.13: The Wuttrichs were eventually able to build a new house, using stone from Ravensthorpe. It is here seen nearing completion, flanked by Queensland silver wattles planted in 1958

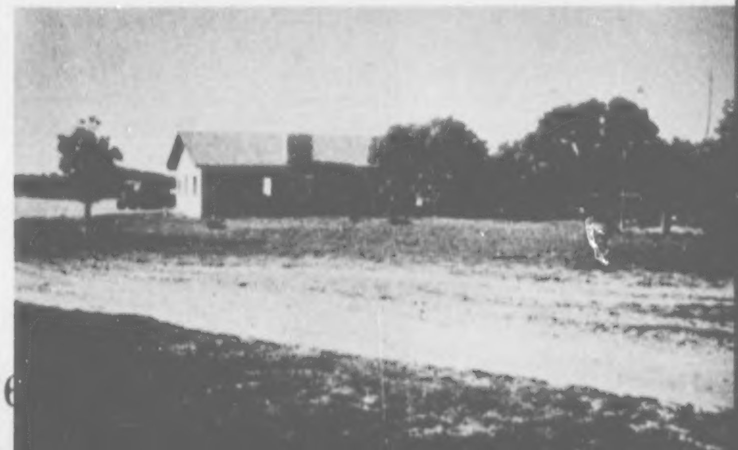


Figure 4.14: The farm yard, with a shelter belt of native trees on the left

Figure 4.15: Members of the Pony Club at a meet—Karl Wuttrich is on the far left, riding the mare on which he won the Champion Boy Rider and Reserve Champion Rider awards at the Esperance Show in 1970

All farmers have to be very careful to allow for transport costs. Because Mr Wuttrich's house is 5 kilometres from the road and then 67 kilometres from Esperance, and Esperance is 670 kilometres by road, 917 kilometres by rail and even further by sea from Perth, this is a very large item in his total farm costs. The cost of rail-freighting superphosphate from Perth to Esperance was $7·84 per tonne in 1961, but this can be avoided now that there are fertiliser works at Esperance. However, in both cases, time and petrol costs are involved in carting the superphosphate from Esperance to the farm. Freight charges on seed can be $2 per bag; on wool to Fremantle about $5 per bale, and to Albany $1·69 per bale. Road-freighting sheep costs at least $1 per head. Travel charges for tradesmen are extremely high.

The Wuttrich property is certainly remote from Perth (over 600 kilometres in a direct line). Look at your atlas and find some places which are about 600 kilometres from Melbourne or from Sydney.

What is the effect of distance on the profits which can be made on this farm? When clover seed brought a high price, farmers near Esperance harvested it for sale. Now that the price has fallen, the seed is no longer harvested, although it is still harvested on farms closer to big cities. Why is this?

It is possible that a power alcohol plant may be set up at Esperance, using barley as a raw material. How might this affect the nearby farmers?

Being so far from Esperance and from Perth affects life for the Wuttrichs in other ways as well. The nearest primary school is at Esperance; although the school bus is free, it does mean a drive to the road and a 67 kilometre bus trip each way every day. The two older children have had to go to boarding school in Perth. Everything that a city dweller does as a matter of course means a 145-kilometre round trip for the Wuttrichs.

You should now be in a position to make a list of all the extra costs—personal costs as well as those of time and money—which are involved in living on this new farm.

However, all the members of the Wuttrich family think that the costs are more than balanced by the kind of life they can lead on the farm. Their chief local amusement is the Pony Club (figure 4.15). Look closely at the other illustrations. What are some of the everyday things that you enjoy doing, which Karl, who is your age, would not be able to do? What do you think he has to compensate him?

The new knowledge and technology of the post-war period has enabled many families like the Wuttrichs to change the natural environment of the Esperance district, developing highly productive farms in a relatively short time, and in a place where hardly anyone could make a living before. We have seen how the quantity of wool produced by the Wuttrichs' sheep has increased; the quality has improved every year, too. However, between 1968 and 1970 the average price of wool sold in Western Australia fell to about 60 per cent of what it was formerly. The Wuttrichs expected their income to fall by 40 per cent, but their costs would go on just the same, perhaps even increasing. They were certainly faced with a major problem if prices did not rise again soon, as they did in 1972–73.

What causes wool prices to fall like this? What can be done to prevent it? Has anything been done?

Should we open up more land to produce more wool, if the market for wool is subject to such fluctuations? Can this Esperance land be used for other things? (You will find a good deal of information in this study to help you answer this question.)

What might happen to these farmers at Esperance if wool prices fell and remained low for many years? Have they had time to build up big reserves of money?

We can see that modern science has made it possible to develop this land so that many hundreds of people are now living where the Dempster brothers once ran their sheep. But the people who settle there still need the pioneering spirit, as well as a scientific approach to farming. What qualities did the old pioneers have? They took risks, they worked hard, they went without things so that they could have a better life in the future —you can probably add to this list.

Go through this study and write down all the ways in which the Wuttrich family have depended on science and modern technology in developing and running their farm. Then make another list of all the evidence which shows they had the pioneering spirit as well.

FURTHER ACTIVITY

How can you find out how accessible (close) to services your home is? You could measure your Accessibility Index.

Measure, in paces, how far it is from your home to

1. a bus stop, tram stop or railway station
2. a primary school
3. a butcher's shop
4. a newsagency
5. a chemist's shop
6. a park
7. a public telephone box
8. a post box.

If a particular service is beyond walking distance, you may use some standard high number, for example 3500 paces.

The Accessibility Index is the average distance to reach a service: sum the distances to all services and then divide by the number of services.

Are all services equally available everywhere? Why? What difference would there be in the Accessibility Index of your home if you lived in an urban area and if you lived on a farm? Are there areas in your town with a very poor Accessibility Index? Some urban housing estates have very few services nearby. These have been termed 'housing deserts'. Should services be more readily available than they are in most cases?

5

Europeans settle the United States, 1607–1900

In the last three to four hundred years, large areas of the earth's surface have been settled by newcomers, mainly from Europe, who dominated or displaced the original inhabitants. The new settlers brought with them types of land use and settlement that were different from those of their predecessors. In Australia, the Aborigines were hunters and did not live permanently in one spot. In North America, the Indians had a more highly developed culture than that of the Australian Aborigines; they grew some crops and tended to establish more permanent dwellings. However, they also lived mainly by hunting, and their settlements were hardly permanent by comparison with the houses in which we live.

At the end of the fifteenth century and during the sixteenth century, several European explorers sailed along and occasionally landed on the east coast of North America. In May 1607, at one of the many bays and inlets along the coastline, the first settlers landed. They faced great difficulties of hunger and sickness, but with Captain John Smith emerging as a resourceful leader the settlement of Jamestown eventually grew; by 1619 the colony, which had been named Virginia, had more than 2000 people.

In 1620, a second group of settlers, the Pilgrim Fathers, landed on the coast much further north in Massachusetts Bay, at a place they called Plymouth. Then followed settlements at Salem, Boston and seven other towns in the same area; Providence, in Connecticut, was next, and some places in Maryland were also colonised; settlers then established themselves on Manhattan Island at the mouth of the Hudson River. From these places, settlement spread along the coast and up river valleys to the inland. Other settlements between Virginia and Manhattan Island were founded in the Pennsylvania and Delaware area, with their centre at Philadelphia (1681). Settlements had also been made in South Carolina, particularly at Charleston (1672).

What were these early settlements like? As you can see from figures 5.1 and 5.2 (page 84), most of the points of settlement were close to the coast or along the rivers. Why would the early settlers have chosen to live in these locations?

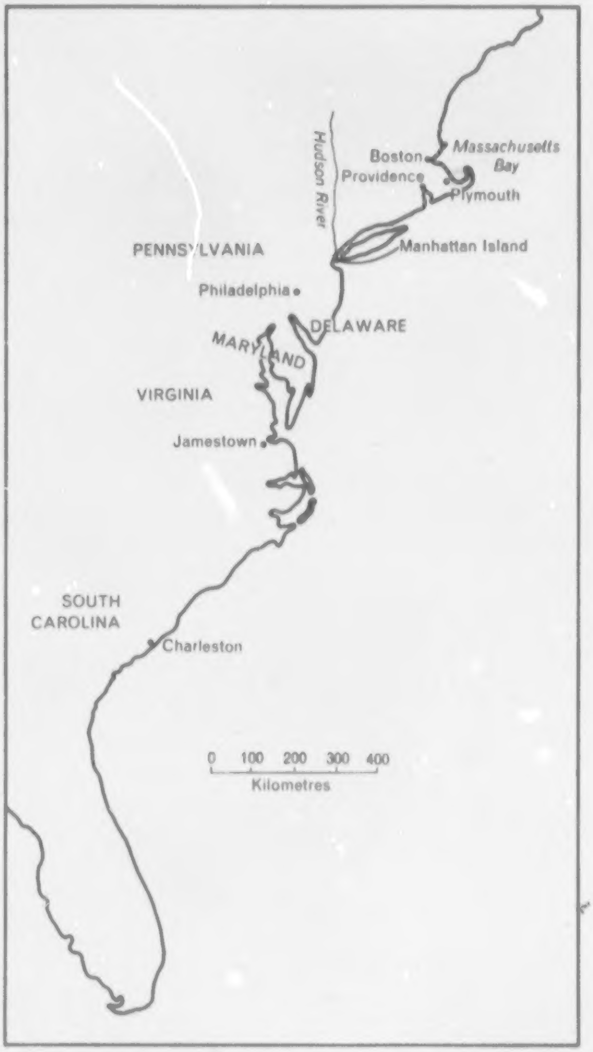


Figure 5.1: Early settlements in the U.S.A., from 1607 onwards. By reference to the text, make a map of settlement history, showing the order of settlement. Do not name the locations, but number them in correct order

Captain John Smith described the first settlement in these words:

> James towne being burnt, wee rebuilt it and three Forts more; besides the Church and Store-house, we had about fortie or fiftie severall houses to keep us warme and dry. . . . We digged a faire well of fresh water in the Fort, where wee had [a variety of cannon]. Wee planted one hundred acres of Corne.
>
> Captain John Smith,
> *The Generall Historie of Virginia, New England and the Summer Isles* (London, 1626)

In 1628, the Massachusetts Bay colony, the first great Puritan settlement, had been founded at Salem; it was followed in 1630 by the establishment of Boston, which was to become the capital of the colony. Thomas Dudley, one of the settlers' leaders, described the problems they faced:

> Our 4 shipps which sett out in Aprill [1630] arrived here in June and July, where wee found the colony [Salem] in a sadd and unexpected condicon, above 80 of them beeing dead the winter before and many of those alive weake and sicke: all the corne & bread amongst them all hardly sufficient to feed them a fortnight, insoemuch that the remainder of 180 servants wee had the 2 years before sent over, comeinge to us for victualls to sustaine them wee found ourselves wholly unable to feed them . . . whereupon necessity enforced us to our extreme loss to give them all libertie; who had cost us about: 16 or 20 £s [sterling] a person furnishing and sending over. But bearing theis things as wee might, wee beganne to consult of the place of our sitting downe: for Salem where wee landed, pleased us not. And to that purpose some were sent to the Bay [Massachusetts] to search upp the rivers for a convenient place; who uppon their returne reported to have found a good place uppon Mistick; but some other of us seconding theis to approve or dislike of their judgement; we found a place [that] liked us better, 3 leagues up Charles river—And there uppon unshipped our goods into other vessels and with much cost and labour brought them in July to Charles Towne; but there receiving advertisements by some of the late arrived shipps from London and Amsterdam of some French preparations against us (many of our people brought with us beeing sick of fevers & the scurvy and wee thereby unable to carry up our ordinance and baggage soe farr) wee were forced to change counsaile and for our present shelter to plant dispersedly, some at Charles Towne which standeth on the North Side of the mouth of Charles River; some on the South Side thereof, which place wee named Boston (as wee intended to have done the place wee first resolved on); some of us uppon Mistick, which wee named Meadford; some of us westwards on Charles river, 4 miles from Charles Towne, which place wee named Watertoune; others of us 2 miles from Boston in a place wee named Rocksbury, others uppon the river of Sawgus betweene Salem and Charles Toune. And the westerne men 4 miles South from Boston at a place wee named Dorchester. This dispersion troubled some of us, but helpe it wee could not, wanting ability to remove to any place fit to build a Toune uppon, and the time too short to deliberate any longer lest the winter should surprize us before wee had builded our houses. . . . of the people who came over with us from the time of their setting saile from England in Aprill 1630, untill December followinge there dyed by estimacon about 200 at the least—Soe lowe hath the Lord brought us! Well, yet they who survived were not discouraged but bearing God's corrections with humilitye and trusting in his mercies, and considering how after a greater ebb hee had raised upp our neighbours at Plymouth we beganne againe in December to consult about a fitt place to build a Toune uppon. . . ; soe after diverse meetings at Boston, Rocksbury and Waterton on the 28th of December wee grew to this resolucon to bind all the Assistants . . . to build howses at a place, a mile east from Waterton neere Charles river, the next Springe, and to winter there the next yeare, that soe by our examples and by removeinge the ordinance and munition thether, all who were able, might be drawn thether, and such as shall come to us hereafter to their advantage bee compelled soe to doe; and soe if God would, a fortifyed Toune might there grow upp, the place fitting reasonably well thereto. . . .
>
> Thomas Dudley, letter to the Countess of Lincoln,
> March 1631

Draw a sketch map to illustrate the type of landing place a seventeenth century colonist would have looked for. Remember:

- Onshore winds could be a problem.
- Ships could 'draw' up to five metres depth of water.
- A pure water supply was needed.
- The site should be a good defensive position.

The settlers found that a large number of foods were available, which the Indians grew or collected: Indian corn, chestnuts, walnuts, cherries, grapes, blackberries, blueberries, strawberries, mulberries, gooseberries, cranberries, plums, crab-apples, beans, pumpkin and squash.

They had brought with them seeds to plant all the common crops of Europe, but the most popular grain crop was to become Indian corn. Most of the settlers who took up land for agriculture were subsistence farmers—they grew crops because they needed them for their own survival. They had also brought the seeds of fruit trees—apples, pears and quinces.

In 1621 cotton was introduced, but it was basically used for local textile needs. On the other hand, some settlers in Virginia and Carolina further south tried to grow the tobacco leaf, a valuable export crop, and found that it could be cultivated successfully.

In 1682, Thomas Ash wrote this:

. . . But now their *Gardens* begin to be supplied with such *European Plants* and *Herbs* as are necessary for the Kitchen, *viz. Potatoes, Lettice, Coleworts* [cabbage], *Parsnip, Turnip, Carrot* and *Reddish:* Their Gardens also begin to be beautified and adorned with such *Herbs* and *Flowers* which to the Smell or Eye are pleasing and agreable, *viz.* The *Rose, Tulip, Carnation* and *Lilly.* &c. Their Provision which grows in the Field is chiefly *Indian* Corn, which produces a vast Increase, yearly, yielding Two plentiful Harvests, of which they make wholesome Bread, and good Bisket, which gives a strong, sound, and nourishing Diet; with Milk I have eaten it dress'd various ways: . . . I have seen the *English* amongst the *Caribbes* roast the green Ear on the Coals, and eat it with a great deal of Pleasure: The *Indians* in *Carolina* parch the ripe Corn, then pound it to a Powder, putting it in a Leathern Bag: When they use it, they take a little quantity of the Powder in the Palms of their Hands, mixing it with Water, and sup it off: with this they will travel several days. In short, it's a Grain of General Use to Man and Beast, many thousands of both kinds in the *West Indies* having from it the greater part of their Subsistence. . . . At *Carolina* they have lately invented a way of makeing with it good sound Beer; but it's strong and heady. . . .

T[homas] A[sh], *Carolina; or a Description of the Present State of that Country* (London, 1682)

Another writer described Pennsylvania in detail, and the way of life that was established there:

The Corn Harvest is ended before the middle of *July,* and most Years they have commonly between Twenty and Thirty Bushels of Wheat for every one they Sow. Their Ground is harrowed with Wooden Tyned Harrows, twice over in a place is sufficient; twice mending of their Plow-Irons in a Years time will serve. Their Horses commonly go without being shod; two Men may clear between Twenty and Thirty Acres of Land in one Year, fit for the Plough, in which Oxen are chiefly us'd, though Horses are not wanting, and of them Good and well shap'd. A Cart or a Wain may go through the middle of the Woods, between the Trees without getting any damage, and of such Land in a convenient place, the Purchase will cost between *Ten* and *Fifteen Pounds* for a Hundred Acres. Here is much Meadow Ground. Poor People both Men and Women, will get near three times more Wages for their Labour in this Country, than they can earn either in *England* or *Wales.*

Here is curious Diversion in Hunting, Fishing, and Fowling, especially upon that Great and Famous River *Suskahanah,* which runs down quite through the heart of the Country to *Mary-Land,* where it makes the Head of *Chesepeck-Bay,* in which place there are an Infinite Number of Sea and Land Fowl, of most sorts. . . . And for Fish, there are prodigious quantities of most sorts. . . . As also the large sort of Fish, as Whales (of which a great deal of Oyl is made), *Salmon, Trout, Sturgeon, Roc, Oysters* (some six Inches long), *Crabs, Cockles. . . .*

There are several sorts of wild *Beasts* of Great Profit, and good Food, *viz. Panthers, Woolves, Fither, Deer, Beaver, Otter, Hares, Musk-Rats, Minks, Wild Cats, Foxes, Rackoons, Rabbits* and that strange Creature, the *Possam,* she having a false Belly to swallow her Young ones, by which means she preserveth them from danger, when any thing comes to disturb them. There are also *Bears, some Wolves,* are pretty well destroy'd by the *Indians,* for the sake of the Reward given them by the *Christian,* for that Service. . . .

There are in the Woods abundance of *Red Deer* (vulgarly called *Stags*) for I have bought of the *Indians* a whole *Buck* (both Skin and Carcass) for two Gills of Gunpowder. Excellent Food, most delicious, far exceeding that in *Europe,* in the Opinion of most that are Nice and Curious People. There are vast Numbers of other Wild Creatures, as *Elks, Bufalos, &c.* all which as well Beasts, Fowl, and Fish, are free and common to any Person who can shoot or take them, without any lett, hinderance or Opposition whatsoever. . . .

Next, I shall proceed to instance in the several sorts of Wild Fruits, as excellent *Grapes, Red, Black, White, Muscadel,* and *Fox,* which upon frequent Experience have produc'd Choice Wine, being daily Cultivated by skilful *Vinerons;* they will in a short space of time, have very good Liquor of their own, and some to supply their Neighbours, to their great advantage. . . . *Wallnuts, Chestnuts, Filberts, Hockery-Nuts, Hartleberries, Mulberries* (white and black), *Rasberries, Strawberries, Cramberries, Plumbs* of several sorts, and many other Wild Fruits, in great plenty, which are common and free for any to gather. . . .

The common Planting *Fruit-Trees,* are *Apples,* which from a Kernel (without Inoculating) will shoot up to be a large Tree, and produce very delicious, large, and pleasant Fruit, of which much excellent *Cyder* is made. . . . *Pears, Peaches, &c.* of which they distil a Liquor much like the taste of *Rumm,* or *Brandy,* which they Yearly make in great quantities: *There are Quinces, Cherries, Goosberries, Currants, Squashes, Pumpkins, Water-Mellons, Muskmellons,* and other *Fruits* in great Numbers, which seldom fail of yielding great plenty. There are also many curious and excellent *Physical Wild Herbs, Roots,* and *Drugs* of great Vertue, and very sanative, as the *Sassafras,* and *Sarsaparilla,* so much us'd in Diet-Drinks for the Cure of the Veneral Disease, which makes the *Indians* by a right application of them, as able *Doctors* and *Surgeons* as any in *Europe,* performing celebrated Cures therewith, and by the use of some particular *Plants* only, find Remedy in all *Swellings, Burnings, Cuts, &c. . . .*

Their sorts of *Grain* are, *Wheat, Rye, Pease, Oates, Barley, Buck-Wheat, Rice, Indian Corn, Indian-Pease,* and *Beans,* with great quantities of *Hemp* and *Flax;* as also several sorts of eating Roots, as *Turnips, Potatoes, Carrats, Parsnips, &c.* all which are produc'd Yearly in greater quantities than in *England,* those *Roots* being much larger, and altogether as sweet, if not more delicious; *Cucumbers, Coshaws, Artichokes,* with many others. . . . There are several Husband Men, who sow Yearly between Seventy and Eighty Acres of *Wheat* each, besides *Barley, Oates, Rye, Pease, Beans,* and other Grain.

They have commonly *Two Harvests* in the Year; First, of *English Wheat,* and next of *Buck* (or *French*) Wheat. They have great Stocks both of *Hogs* and *Horses,* kept in the Woods. . . . Their *Horses* are very hardy, insomuch that being very hot with riding or otherwise, they are turn'd out into the Woods at the same Instant, and yet receive no harm; some Farmers have Forty, some Sixty, and from that Number to Two or Three Hundred Head of *Cattle:* Their Oxen usually weigh Two Hundred Pounds a Quarter. They are commonly fatter of Flesh, and yield more Tallow (by feeding only on Grass) than the Cattle in *England*. And for Sheep, they have considerable Numbers which are generally free from those infectious Diseases which are incident to those Creatures in *England*, as the *Rot, Scab,* or *Maggots;* They commonly bring forth two *Lambs* at once, some *twice in one Year*, and the Wooll is very fine, and thick, and also very white.

Bees thrive and multiply exceedingly in those parts, the *Sweeds* often get great store of them in the Woods, where they are free for any Body. Honey (and choice too) is sold in the Capital City [Philadelphia] for Five Pence *per* Pound. Wax is also plentiful, cheap, and a considerable Commerce. Tame Fowls, as *Chickens, Hens, Geese, Ducks, Turkeys,* &c. are large, and very plentiful all over this Countrey.

And now for their Lots and Lands in City and Countrey, in their great Advancement since they were first laid out, which was within the compass of about Twelve Years, that which might have been bought for Fifteen or Eighteen Shillings, is now sold for Fourscore Pounds in ready Silver; and some other Lots, that might have been then Purchased for Three Pounds, within the space of Two Years, were sold for a Hundred Pounds a piece, and likewise some Land that lies near the City, that Sixteen Years ago might have been Purchas'd for Six or Eight Pounds the Hundred Acres, cannot now be bought under One Hundred and Fifty, or Two Hundred Pounds.

Now the true Reason why this Fruitful Countrey and Florishing City advance so considerably in the Purchase of Lands both in the one and the other, is their great and extended Traffique and Commerce both by Sea and Land, viz. to *New-York, New-England, Virginia, Mary-Land, Carolina, Jamaica, Barbadoes, Nevis, Monserat, Antego St. Christophers, Barmudoes, New-Found-Land, Maderas, Saltetudeous,* and *Old-England;* besides several other places. Their merchandise chiefly consists in *Horses, Pipe-Staves, Pork* and *Beef* Salted and Barrelled up, *Bread,* and *Flower,* all sorts of Grain, *Pease, Beans, Skins, Furs, Tobacco,* or *Pot-Ashes, Wax,* &c which are Barter'd for *Rumm, Sugar, Molasses, Silver, Negroes, Salt, Wine, Linen, Household-Goods* &c.

However, there still remain Lots of Land both in the aforesaid City and Country, that any may Purchase almost as cheap as they could at the first Laying out or Parcelling of either City or Country; which is (in the Judgment of most People) the likeliest to turn to account to those that lay their Money out upon it, and in a shorter time than the aforementioned Lots and Lands that are already improved, and for several Reasons. In the first place, the Countrey is now well inhabited by the Christians, who have great Stocks of all sorts of Cattle, that increase extraordinarly, and upon that account they are oblig'd to go farther up into the Countrey, because there is the chiefest and best place for their Stocks, and for them that go back into the Countrey, they get the richest Land, for the best lies thereabouts.

Secondly, Farther into the Countrey is the Principal Place to Trade with the *Indians* for all sorts of *Pelt,* as *Skins* and *Furs,* and also *Fat Venison,* of whom People may Purchase cheaper by three Parts in four than they can at the City of *Philadelphia.*

Thirdly, Backwards in the Countrey lies the *Mines* where is *Copper* and *Iron,* besides other *Metals,* and *Minerals,* of which there is some Improvement made already in order to bring them, to greater Perfection; and that will be a means to erect more Inland Market-Towns, which exceedingly promote Traffick.

Fourthly, and lastly, Because the Countrey at the first, laying out, was void of Inhabitants (except the Heathens, or very few Christians not worth naming) and not many People caring to abandon a quiet and easie (at least tolerable) Life in their Native Countrey (usually the most agreeable to all Mankind) to seek out a new hazardous, and careful one in a Foreign Wilderness or Desart Countrey, wholly destitute of Christian Inhabitants, and even to arrive at which, they must pass over a vast Ocean, expos'd to some Dangers, and not a few Inconveniences: But now all those Cares, Fears and Hazards are vanished, for the Countrey is pretty well Peopled, and very much Improv'd, and will be more every Day, now the Dove is return'd with the Olive-branch of Peace in her Mouth.

G. Thomas, *An Historical and Geographical Account of the Province and Country of Pensilvania, in America . . .*
(London, 1698)

◆

The preceding quotation gave an account of Pennsylvania as it appeared to a seventeenth century observer. You may like to write a description or 'stocktake' of your own home state in the twentieth century, with the particular aim of producing a record for posterity. Try to use major topic headings to divide your account into areas similar to those covered in the quotation:

- Location and settlement
- Natural flora and fauna
- Crops and livestock, and farming procedures
- Trade, mining and industrial activities
- Availability of land

Do not write more than one and a half pages. You will need to be careful in selecting the information that you feel would be most interesting or enlightening for a twenty-third century reader.

By 1650, settlement was well established. Look at figure 5.2. In which area did settlement appear to have spread most? In which area was the settlement densest? Where had settlement spread furthest inland? Why?

The types of settlement varied from one part of the country to another. The northern part of the coast, called New England, was settled by groups

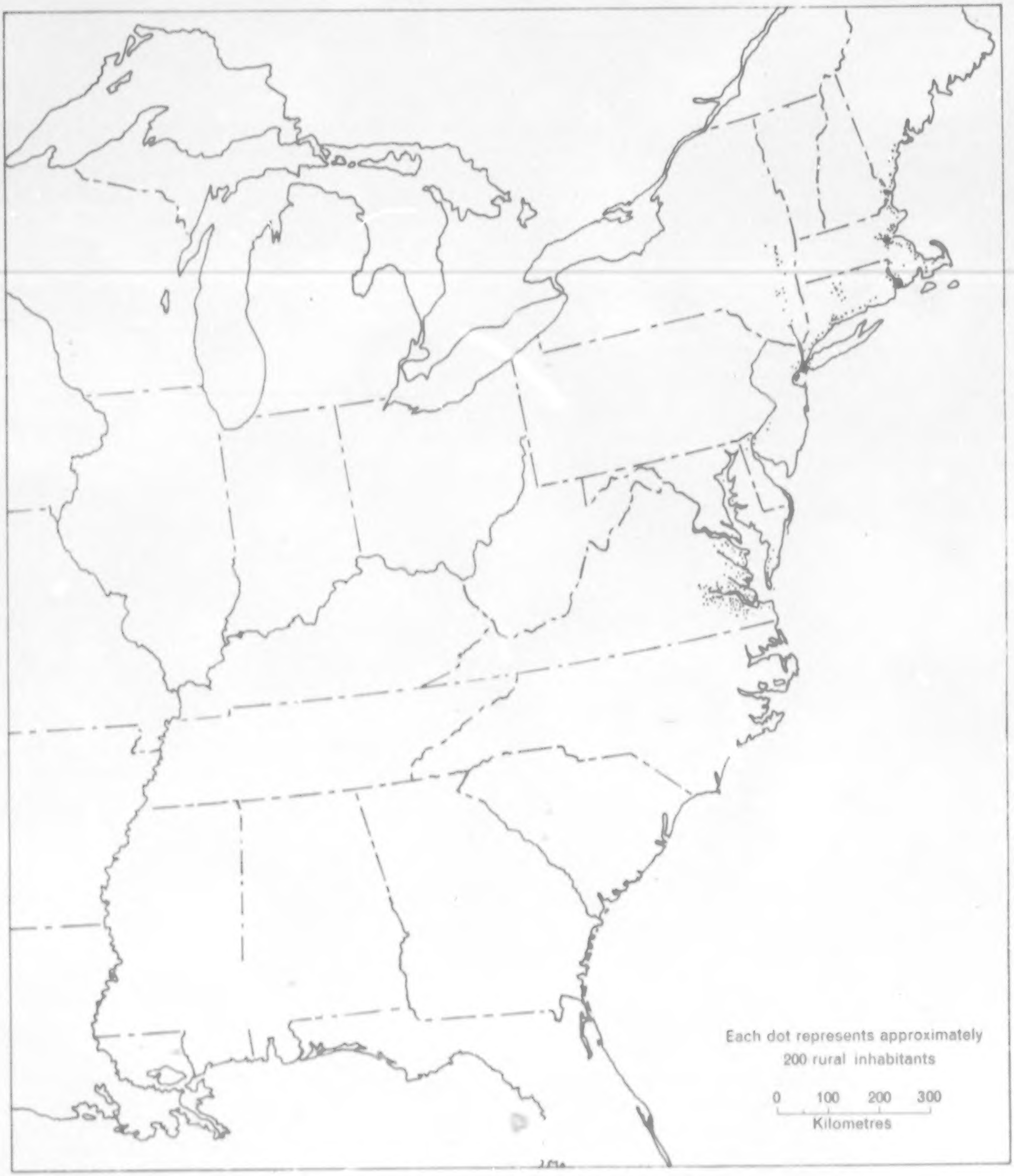

Each dot represents approximately
200 rural inhabitants
0
100
200
300
Kilometres

*Figure 5.2: Distribution of population in the U.S.A. in 1650 (**Geographical Review**, vol. 30, 1940)*

of people with strong religious beliefs, who wished to live in very compact towns. Their settlements were like English manor villages; families owned land individually, but a portion was held in common.

In the central area—New York and Pennsylvania—settlement expansion was by single families on individual farms, rather than by closely knit villages. This Irish colonist described his life as an individual settler in Pennsylvania:

> Land is of all Prices Even from ten Pounds, to one hundred Pounds a hundred, according to the goodness or else the situation thereof, & Grows dearer every year by Reason of Vast Quantities of People that come here yearly from Several Parts of the world, therefore thee & thy family or any that I wish well I wod desire to make what Speed you can to come here the Sooner the better. We have traveled over a Pretty deal of this country to seek the Land, & [though] we met with many fine Tracts of Land here & there in the country, yet my father being curious & somewhat hard to Please Did not buy any Land until the Second day of 10th mo: Last and then he bought a Tract of Land consisting of five hundred Acres for which he gave 350 pounds. It is Excellent good land but none cleared, Except about 20 Acres, with a small log house and Orchard Planted, we are going to clear some of it Directly, for our next Sumer's fallow. We might have bought Land much Cheaper but not so much to our Satisfaction. We stayed in Chester 3 months & then we Rented a Place 1 mile from Chester, with a good brick house & 200 Acres of Land for [—] pound a year, where we continue till next May. We have sowed about 200 Acres of wheat & 7 acres of rye this season. We sowed but a bushel on an acre, 3 pecks is Enough on new ground. . . . We have the finest plows here that Can be. We plowed up our Sumer's fallows in May & June, with a Yoak of Oxen & 2 horses & they goe with as much Ease as Double the number in Ireland. We sow our wheat with 2 horses. A boy of 12 or 14 years old Can hold Plow here, a man Comonly holds & Drives himself. They plow an Acre, nay some Plows 2 Acres a day. They sow Wheat & Rye in August or September. We have had a crop of oats, barley & very good flax & hemp, Indian Corn & buckwheat all of our own Sowing & Planting this last summer. We also planted a bushel of white Potatoes Which Cost us 5 Shills. & we had 10 or 12 bushels Increase. This country yields Extraordinary Increase of all sorts of Grain Likewise—for nicholas hooper had of 3 Acres of Land & at most 3 bushels of Seed above 80 bushels Increase so that it is as Plentifull a Country as any Can be if people will be Industrious. . . . All Sorts of Provisions are Extraordinary Plenty in Philadelphia market, where Country people bring in their comodities. Their markets are on 4th day and 7th day. This country abounds in fruit. Scarce an house but has an Apple, Peach & cherry orchard. As for chestnuts, Wallnuts, & hasel nuts, Strawberrys, Billberrys & Mulberrys they grow wild in the woods and fields in Vast Quantities. They also make great Preparations against harvest; both Roast & boyled, Cakes & Tarts & Rum, stand at the Lands End, so that they may Eat and Drink at Pleasure. . . . The Winters are not so cold as we Expected nor the Sumers so Extreme hot as formerly, for both Sumer and Winter are moderater than they ever were known. In Sumer time they wear nothing but a Shirt & Linnen drawers Trousers, which are breeches and stockings all in one made of Linnen; they are fine Cool wear in Sumer. . . . There is 2 fairs, yearly & 2 markets weekly in Philadelphia also 2 fairs yearly in Chester & Likewise in new castle, but they Sell no Cattle nor horses, no living Creatures, but altogether Merchant's Goods, as hatts, Linnen & woolen Cloth, handkerchiefs, knives, Scizars, tapes & treds buckels, Ribonds & all Sorts of neccessarys fit for our wooden Country & here all young men and women that wants wives or husbands may be supplyed.
>
> Letter written by Hugh Boulter, D.D., Lord Primate of Ireland (Oxford, 1749)

To the south, from Virginia to Georgia, the first communities were compact, for reasons of defence. As the settlers developed subsistence farming, and tobacco growing then became important, settlement began to spread inland and 'plantations' were established. These plantations were very large farms under an individual owner. They required a large labour force, and negro slaves began to be imported for this purpose.

In the following extract, a planter in South Carolina gives practical advice on how to establish a plantation:

> If any one designs to make a Plantation, in this Province, out of the Woods, the first thing to be done is, after having cutt down a few Trees, to split Palissades, or Clapboards, and therewith make small Houses or Huts, to shelter the Slaves. After that, while some Servants are clearing the Land, others are to be employed in squaring or sawing Wallplats, Posts, Rafters, Boards and Shingles, for a small House for the Family, which usually serves for a Kitchin afterwards, when they are in better Circumstances to build a larger. During the Time of this Preparation, the Master Overseer, or white Servants, go every Evening to the next Neighbour's House, where they are lodg'd and entertain'd kindly, without any Charges. And if the Person have any Wife or Children, they are commonly left in some Friend's House, till a suitable dwelling Place and Conveniences are provided, fit for them to live decently.
>
> The properst Time to begin a Settlement is in *September*, or, at farthest, before the first of *December*. The Time between that and the first of *March* is spent in cutting down and burning the Trees, out of the Ground, design'd to be sowed that Year, splitting Rails, and making Fences round the Corn Ground, and Pasture. The smallest Computation usually made is, that each labouring Person will, in this Time, clear three Acres fit for Sowing.
>
> In the second Fall, or Winter, after a Plantation is settled, they make Gardens, plant Orchards, build Barns,

> and other convenient Houses. The third or fourth Winter, Persons of any Substance provide Brick, Lime, or other Materials, in order to build a good House. The Lime here is all made of Oister-shells, burnt with Wood; of these there is great Plenty lying in and by all Creeks and Rivers, in great Heaps or Beds, where large Boats are loaden at low Water.
>
> Our Cows graze in the Forests, and the Calves being separated from them, and kept in Pastures, fenced in, they return home at Night to suckle them. They are first milk'd, then shut up in a Fold all Night, milk'd again in the Morning, and then turn'd out into the Woods. Hogs rove several Miles over the Forests, eating such Nuts and Ground-Roots as they can find; but having a Shelter made at home to keep them warm, and something given them to eat, they generally return every Evening.
>
> T. Nairne, *A Letter from South Carolina* (London, 1710)

However, one of these southern areas, North Carolina, did not develop in this way. Only a few people moved into this area, and then mainly from settlements to the north and south. The most successful were individual settlers living on small farms, growing food for their own needs. There were few slaves and few villages. Virtually no settlers arrived by ship. Look at figure 5.3. What features would have prevented such settlement?

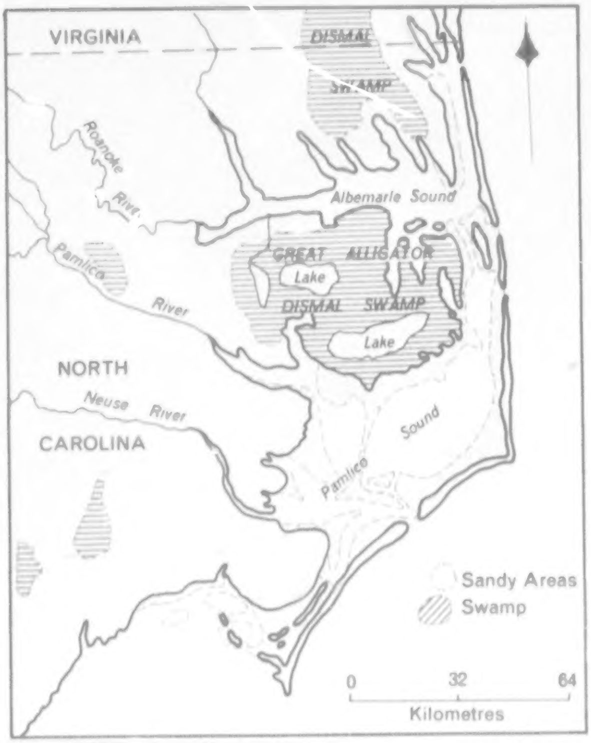


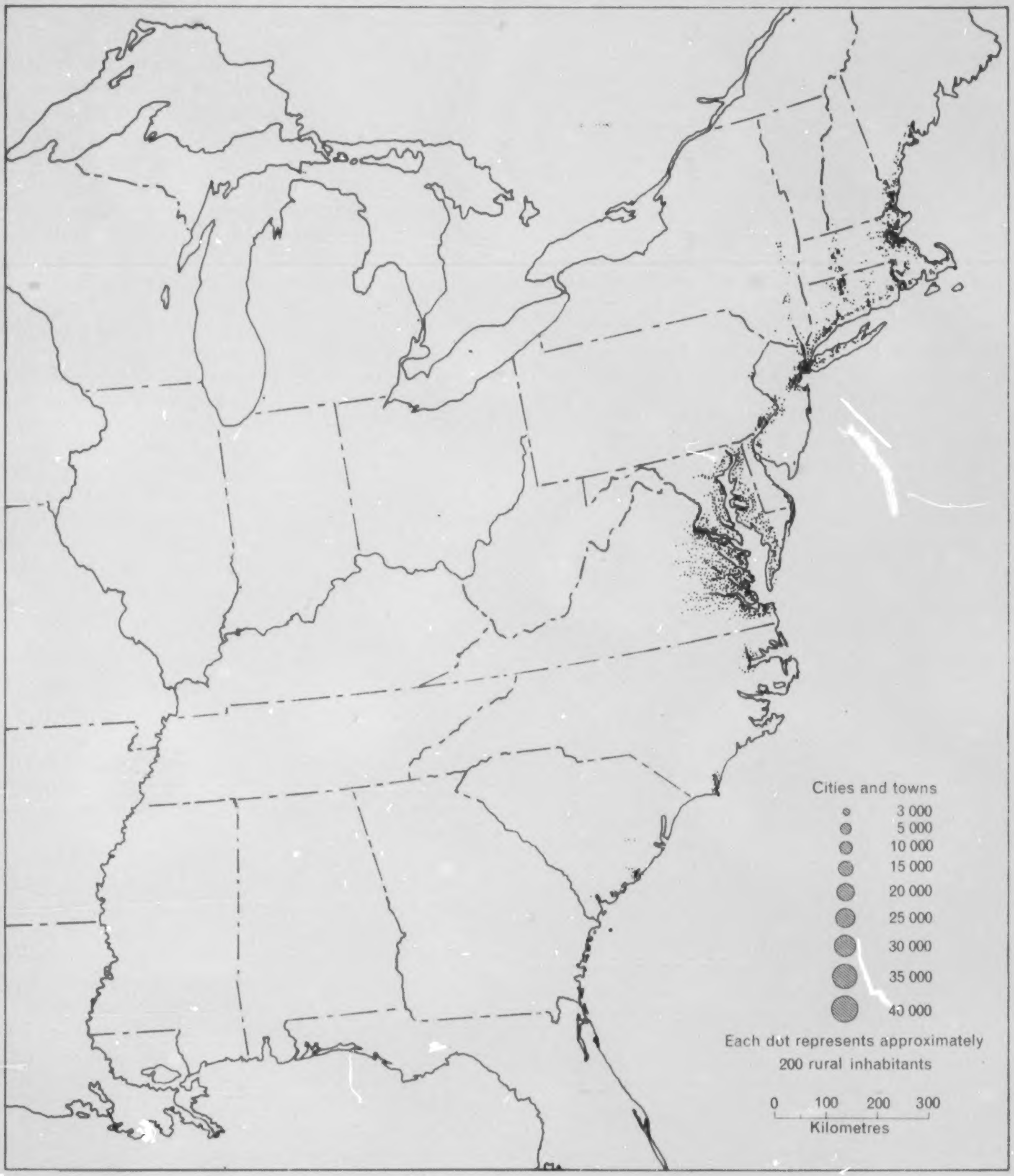
Figure 5.3: The coastline of North Carolina, adapted from a map published in 1775

By 1700, European settlement had spread further. Compare figure 5.4 with figure 5.2 showing population distribution in 1650. In which areas had settlement spread most? In figure 5.4, compare the distribution of population in the north with that further south. What difference was there, and why would this have been so? What new form of settlement had begun to occur?

As people began to move inland, they created a 'line of settlement'—some historians have called this line a *frontier*. Do you think this is a good name? The men who were at the vanguard were fur traders and 'pathfinders', blazing a trail for settlers. Behind them came pioneer farmers, who could not afford to buy land, but who settled the newly opened-up country and worked hard, hoping to produce rice or tobacco. Later still came established farmers with money, who had found their old plantations further east not profitable enough, or who thought that the new lands would provide better opportunities.

This is the story of the Witherspoon family, who left Ireland in 1734 for Charleston in South Carolina. Read the quotation carefully, and then state the major differences between this form of settlement development and that described by Thomas Dudley on page 81.

> We landed in Charleston three weeks before Christmas. We found the inhabitants very kind. We staid in town until after Christmas, and were put on board of an open boat, with tools and a year's provisions [the customary bounty to immigrants], and one still-mill. They allowed each hand upwards of sixteen, one axe, one broad hoe, and one narrow hoe. Our provisions were Indian corn, rice, wheaten flour, beef, pork, rum, and salt. We were much distressed in this part of our passage. As it was the dead of winter, we were exposed to the inclemency of the weather day and night; and (which added to the grief of all pious persons on board) the atheistical and blasphemous mouths of our Patroons and the other hands. They brought us up as far as Potatoe Ferry and turned us on shore, where we lay in Samuel Commander's barn for some time. . . .
>
> We set out in the morning; and some got no further that day than Mr. McDonald's and some as far as Mr. Plowden's; some to James Armstrong's, and some to Uncle William James's. [These were emigrants who had preceded Witherspoon, in the first emigration.] . . . Their little cabins were as full that night as they could hold, and the next day every one made the best they could to their own place, which was the first day of February, 1735. . . . When we came to the Bluff, my mother and we children were still in expectation that we were coming to an agreeable place. But when we arrived and saw nothing but a wilderness, and instead of a fine timbered house, nothing but a mean dirt house, our spirits quite sank. . . .
>
> My father gave us all the comfort he could by telling us



Cities and towns
3 000
5 000
10 000
15 000
20 000
25 000
30 000
35 000
40 000
Each dot represents approximately
200 rural inhabitants
0
100
200
300
Kilometres

*Figure 5.4: Distribution of population in the U.S.A. in 1700 (**Geographical Review**, vol. 30, 1940)*

> we would get all those trees cut down, and in a short time there would be plenty of inhabitants, so that we could see from house to house. . . .
>
> After a season, some men got such a knowledge of the woods as to 'blaze' paths, so the people soon found out to follow 'blazes' from place to place. As the winter season was far advanced, the time to prepare for planting was very short. Yet people were very strong and healthy, all that could do anything wrought diligently, and continued clearing and planting as long as the season would admit, so that they made provision for the ensuing year. As they had but few beasts, a little served them, and as the range was good, they had no need of feeding creatures for some years. . . .
>
> We had a great deal of trouble and hardships in our first settling, but the few inhabitants continued still in health and strength. Yet we were oppressed with fears, on divers accounts, especially of being massacred by the Indians, or bitten by snakes, or torn by wild beasts, or being lost and perishing in the woods. Of this last calamity there were three instances.
>
> Letter from Robert Witherspoon

As figure 5.4 shows, the movement of people westwards did not occur evenly from settlements along the entire coastline. In the south, where more level land was available, the plantation owners were moving into the higher land at the foot of the mountains. This area is called the Piedmont. (Those of you who are studying French might be able to explain why it has that name.) In the far south, cotton was the dominant plantation crop; in Virginia to the north, tobacco was more important.

Tobacco growing required a large amount of labour. The seeds were planted in outdoor patches as soon as any danger of frosts had passed. The transplanting of the tobacco seedlings into the prepared fields occurred in April to May, at the time of the wet season. Where there was plenty of labour available (usually slaves), hoes rather than ploughs were used to prepare the fields. During the growing season there were periods of cultivation to encourage the most satisfactory growth. Harvesting was a heavy labour period, as hand knives were used to cut the leaves, which were then threaded on pointed sticks to begin the 'curing' process.

Further north, in the New England–Pennsylvania area, farmers concentrated on different types of activities. The farm shown in figure 5.5 was built in 1765, although the painting dates from around 1822. The farm scene in figure 5.6 was painted about 1860, but nevertheless would differ very little in general from farming in the previous century; the artist provides a visual list of all the animals and buildings on the farm. How would these two farms have differed from those in the south?

Thus America's first European inhabitants settled along the narrow eastern coastal strip. Fear of the Indians and an awe of the dense inland forest caused the colonists to live together in well-guarded and fortified settlements, some spreading into the interior in a few areas (see figure 5.7).

However, even before a growing population created a desire for expansion, some brave spirits were setting out into the wilderness. The unknown territory was first explored by trappers in search of furs for the European market. Their reports of the country inland inspired other Americans to move westwards. Alexis de Tocqueville, a Frenchman who toured America in the 1830s, saw this growing restlessness as a basic aspect of the American character. He wrote: '. . . in the United States a man builds a house in which to spend his old age, and he sells it before the roof is on . . . he brings a field into tillage and leaves other men to gather the crops . . . he settles in a place, which he soon afterwards leaves to carry his changeable longings elsewhere'. Whatever the explanation, the line of settlement moved steadily westwards throughout the eighteenth and into the nineteenth century.

Figure 5.7 shows that, especially in the north, settlement was hemmed in along the coastal plain. If you look at a detailed relief map of this area of the United States, you will see a series of mountain ranges clearly indicated. Does this help to explain some of the patterns in figure 5.7? How? If the United States was to expand, then this barrier had to be crossed.

In 1803, the Rev. Thad. Mason Harris, a visitor to the United States, wrote: '. . . it is only in particular places that the ridges can be crossed. Generally the road leads through gaps, and winds around the sides of mountains; and even at these places is steep and difficult.' Late in the eighteenth century the frontiersmen and explorers had begun to find these crossing points. What did the explorers have to find in the mountains in order to get through? What did the Rev. Harris say about routes through the mountains? Try to think of yourself as an explorer; what would you try to find in a mountainous area?

By 1790, people had settled west of the mountain ranges. Look carefully at figure 5.8. What is unusual about the pattern of settlement? What do you think is the reason for this pattern?

How did people cross the mountains? As you can see in figure 5.8, there were by 1790 two inland areas of settlement which were separate from the early settlements—one in the north, opposite

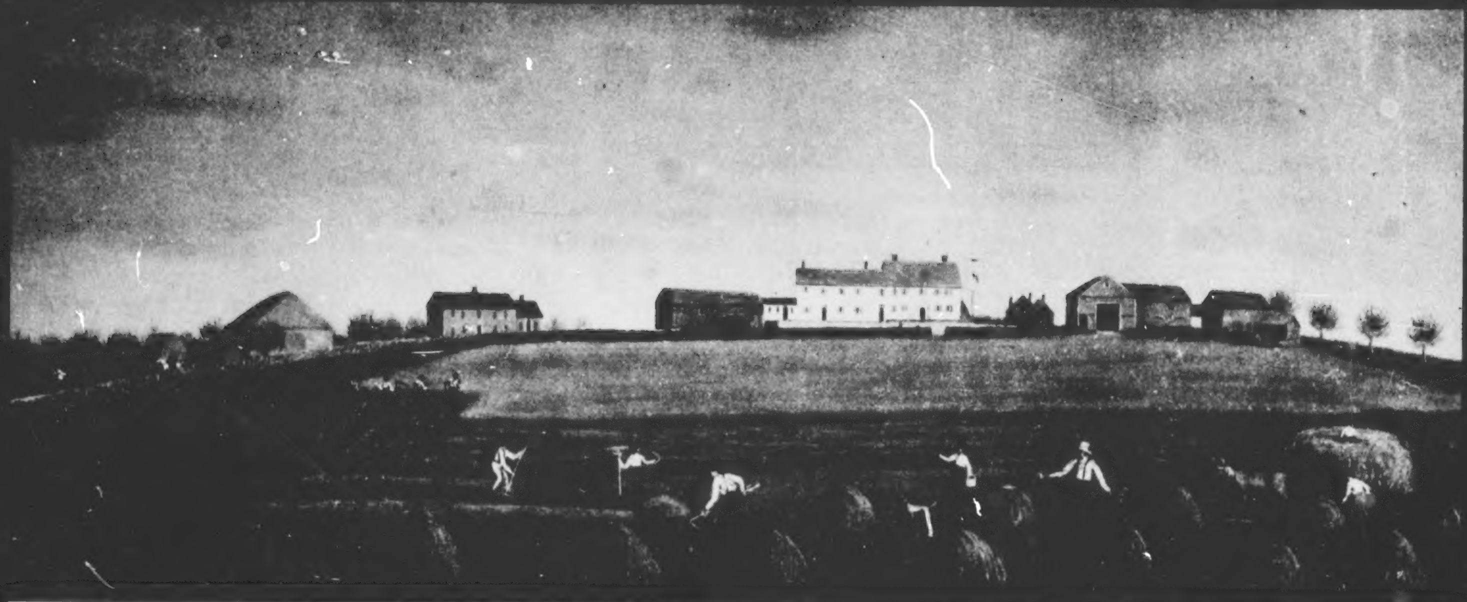
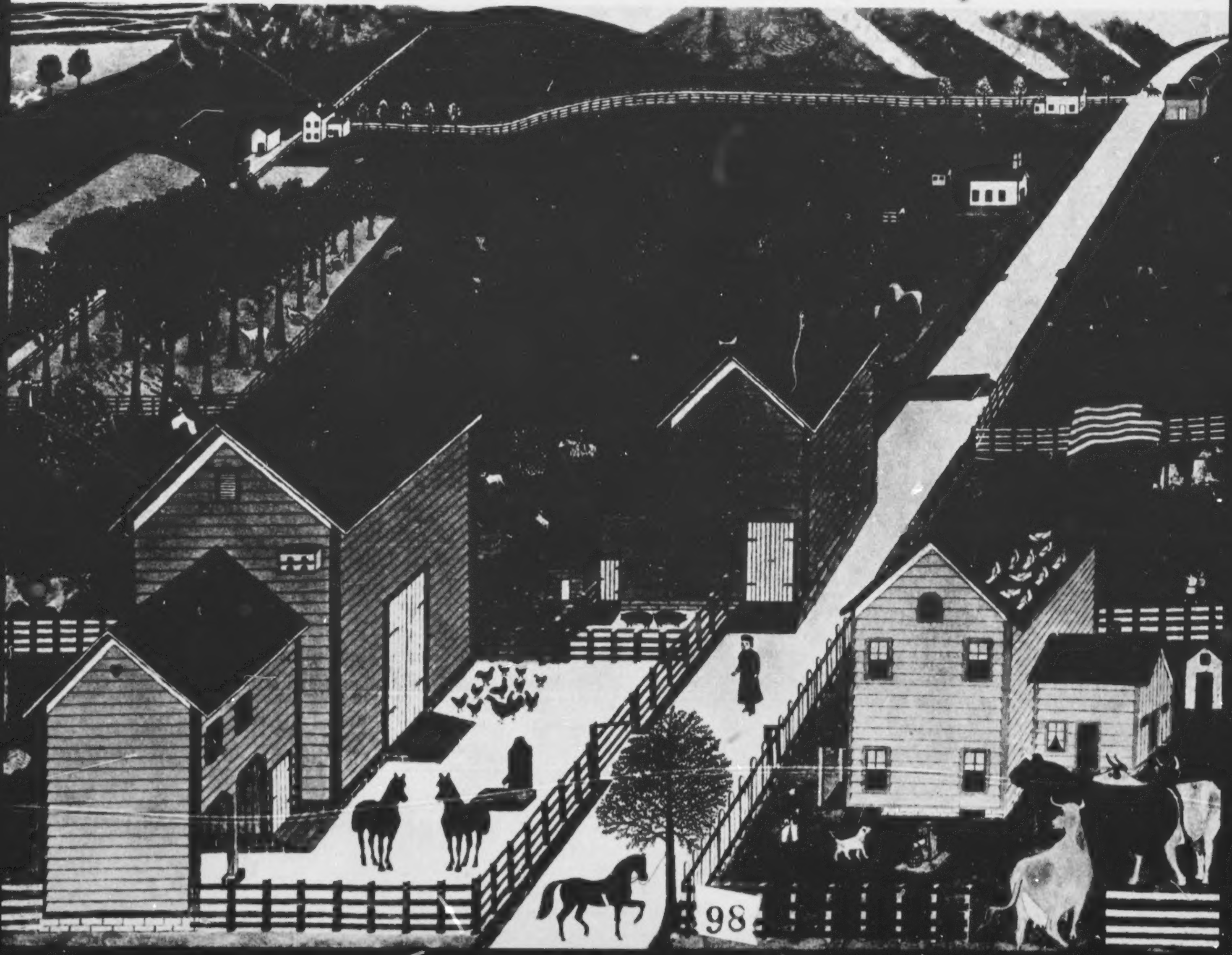


Figure 5.5: Ralph Wheelock's farm in Massachusetts (painting by Francis Alexander, c. 1822, National Gallery of Art, Washington D.C. Gift of Edgar William and Bernice Chrysler Garbisch)

Figure 5.6: Mahantango Valley farm in Pennsylvania (painting by an unknown artist, c. 1860, National Gallery of Art, Washington D.C. Gift of Edgar William and Bernice Chrysler Garbisch)



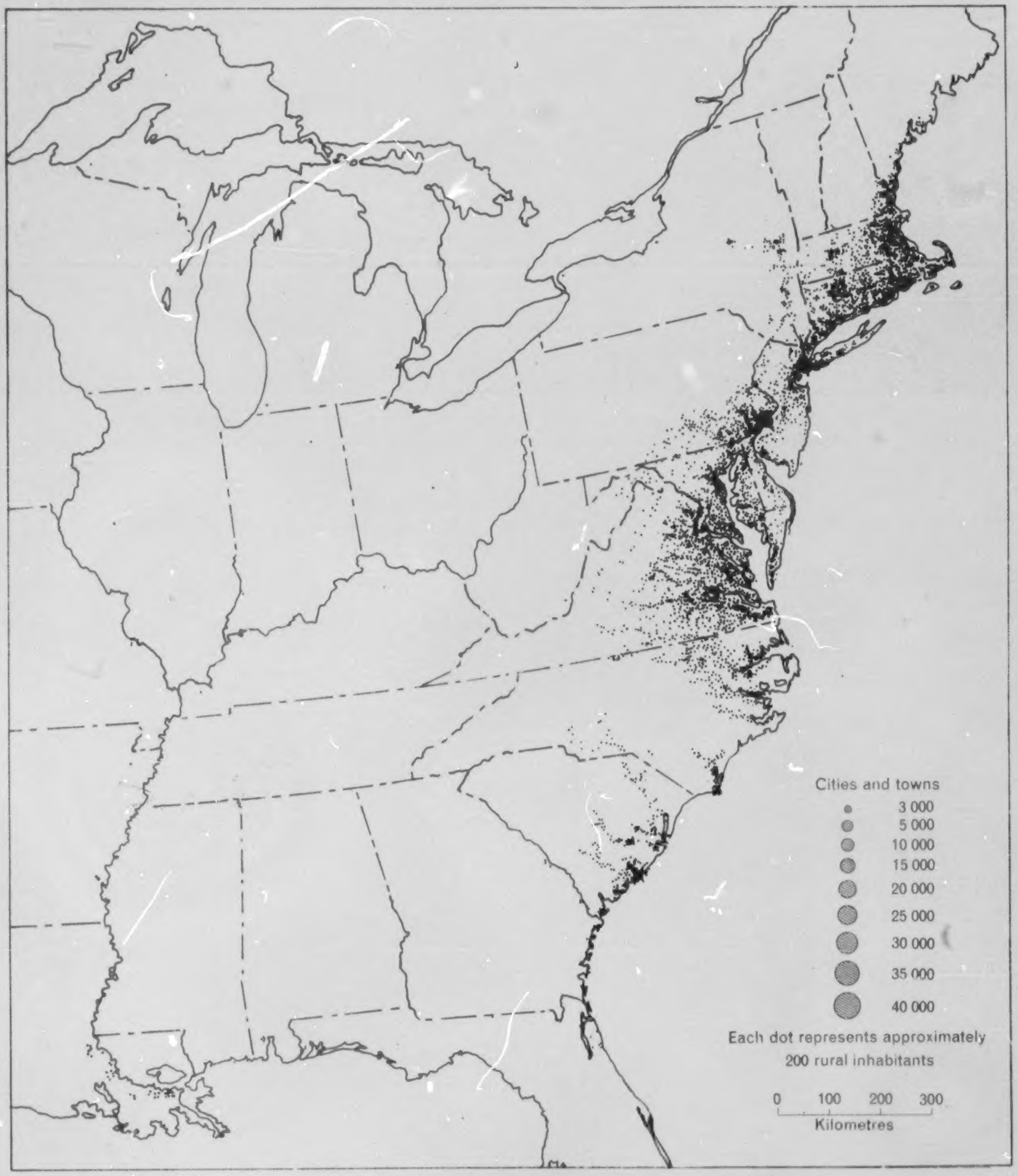

Cities and towns
3 000
5 000
10 000
15 000
20 000
25 000
30 000
35 000
40 000
Each dot represents approximately
200 rural inhabitants
0
100
200
300
Kilometres

*Figure 5.7: Distribution of population in the U.S.A. in 1740 (**Geographical Review**, vol. 30, 1940). Where has settlement spread most since 1700? What is unusual about the pattern of settlement along the outer fringe? What might have caused this pattern?*

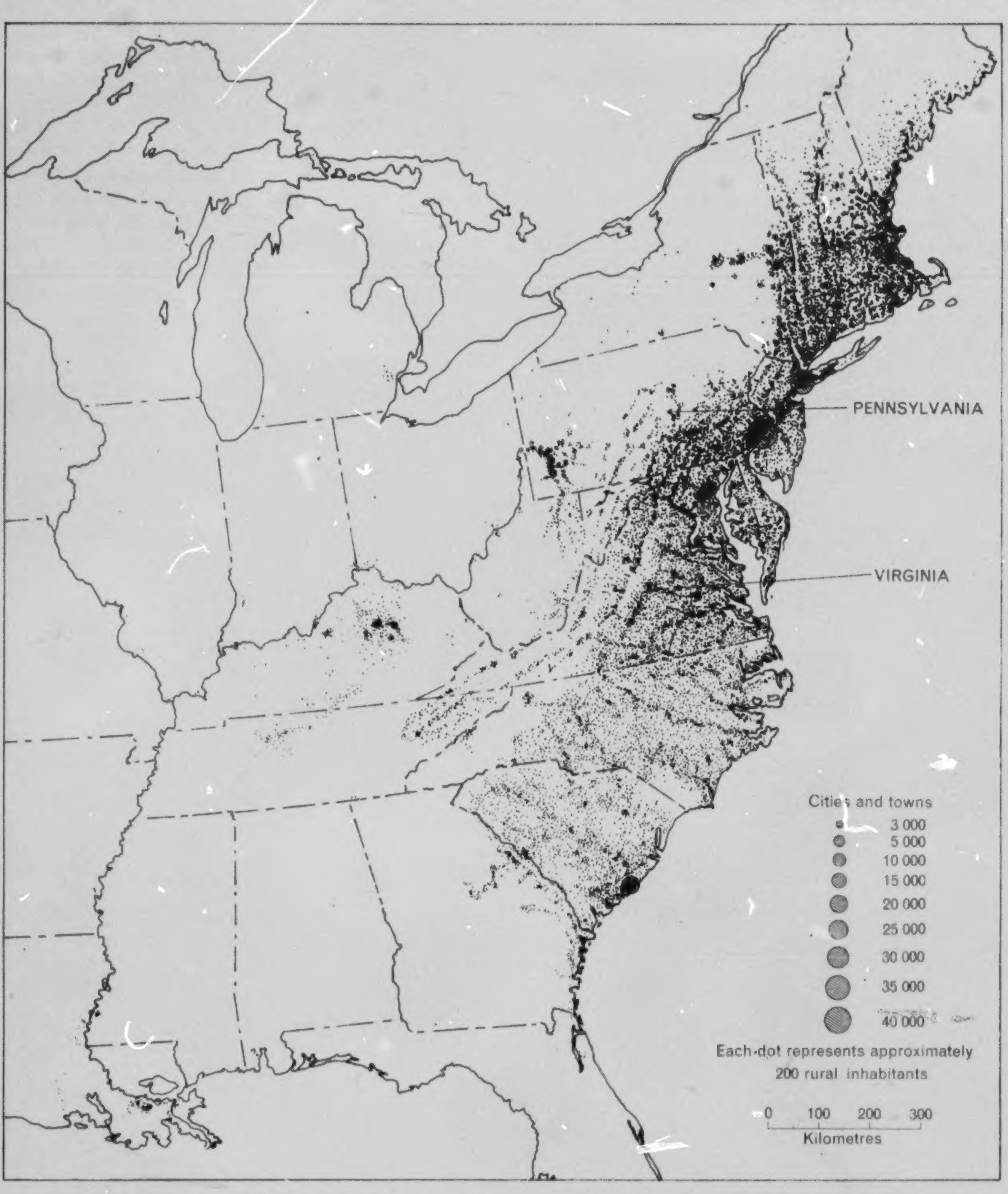

PENNSYLVANIA
VIRGINIA
Cities and towns
3 000
5 000
10 000
15 000
20 000
25 000
30 000
35 000
40 000
Each dot represents approximately 200 rural inhabitants
0 100 200 300
Kilometres

*Figure 5.8: Distribution of population in the U.S.A. in 1790 (**Geographical Review**, vol. 30, 1940)*

Pennsylvania, and one in the south, opposite the earliest settlements in Virginia.

In 1769, Daniel Boone had passed through the Cumberland Gap and was able to show a number of colonising groups the way into the area now known as Kentucky (figure 5.9). This was the start of the southern move.

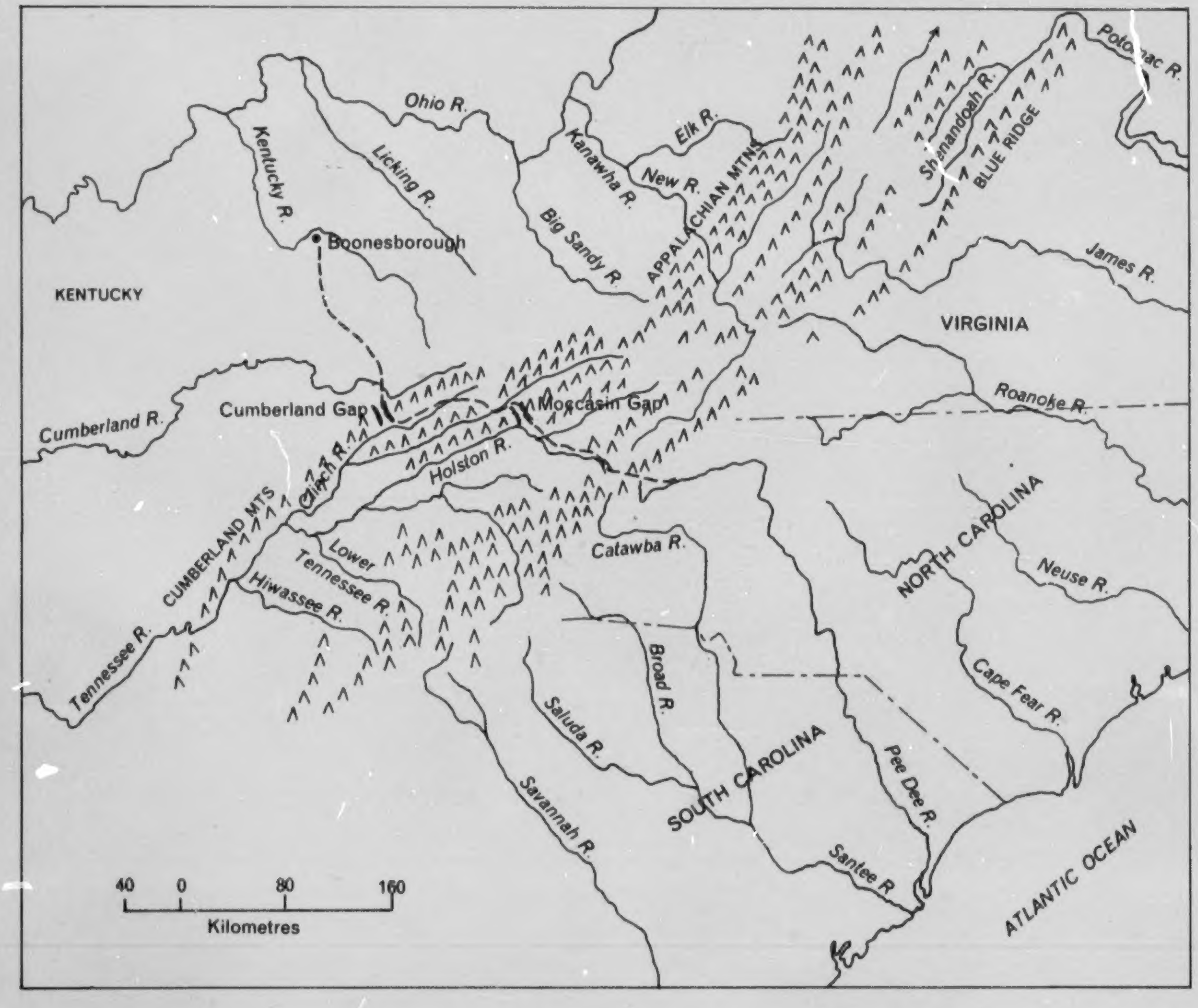
In the north, the natural focus was the place where the Allegheny and Monongahela Rivers join to form the Ohio River (figure 5.10). The Ohio fork was the focus of three routes. The northernmost route started from Philadelphia and proceeded to Harris' Ferry; it then followed the Juniata and Little Juniata Rivers, winding its way through the ridges and valleys of the mountains; next came a difficult crossing over the Allegheny Ridge and on to the Allegheny River at Kittanning; the route finally followed the river down to the fork of the Ohio, where a city was growing on the site of a former French and later British fort—its name was at first Fort Duquesne, then Fort Pitt, and finally Pittsburgh.

The centre route also began at Philadelphia, passing through Harris' Ferry and on to Carlisle; it then followed a valley to Fort Loudon and crossed several ridges as it moved westwards through Fort Littleton and Bedford to Loyal Hannon, where one of the Ohio tributaries had its headwaters. The route then proceeded almost directly to Pittsburgh.

The southern route followed the Potomac River up as far as Fort Cumberland; it then circled across ridges to Fort Necessity, and along the Youghiogheny River to Pittsburgh.

Using the information presented in figure 5.10 and the description given above, draw a labelled

Figure 5.9: Daniel Boone's route across the Appalachians, 1769


Ohio R.
Licking R.
Kentucky R.
Boonesborough
KENTUCKY
Kanawha R.
Big Sandy R.
Elk R.
New R.
APPALACHIAN MTNS
Shenandoah R.
BLUE RIDGE
Potomac R.
James R.
VIRGINIA
Roanoke R.
Cumberland R.
Cumberland Gap
Moccasin Gap
Clinch R.
Holston R.
CUMBERLAND MTS
Lower Tennessee R.
Hiwassee R.
Tennessee R.
Catawba R.
NORTH CAROLINA
Neuse R.
Broad R.
Saluda R.
Cape Fear R.
Pee Dee R.
SOUTH CAROLINA
Savannah R.
Santee R.
ATLANTIC OCEAN
40
0
80
160
Kilometres

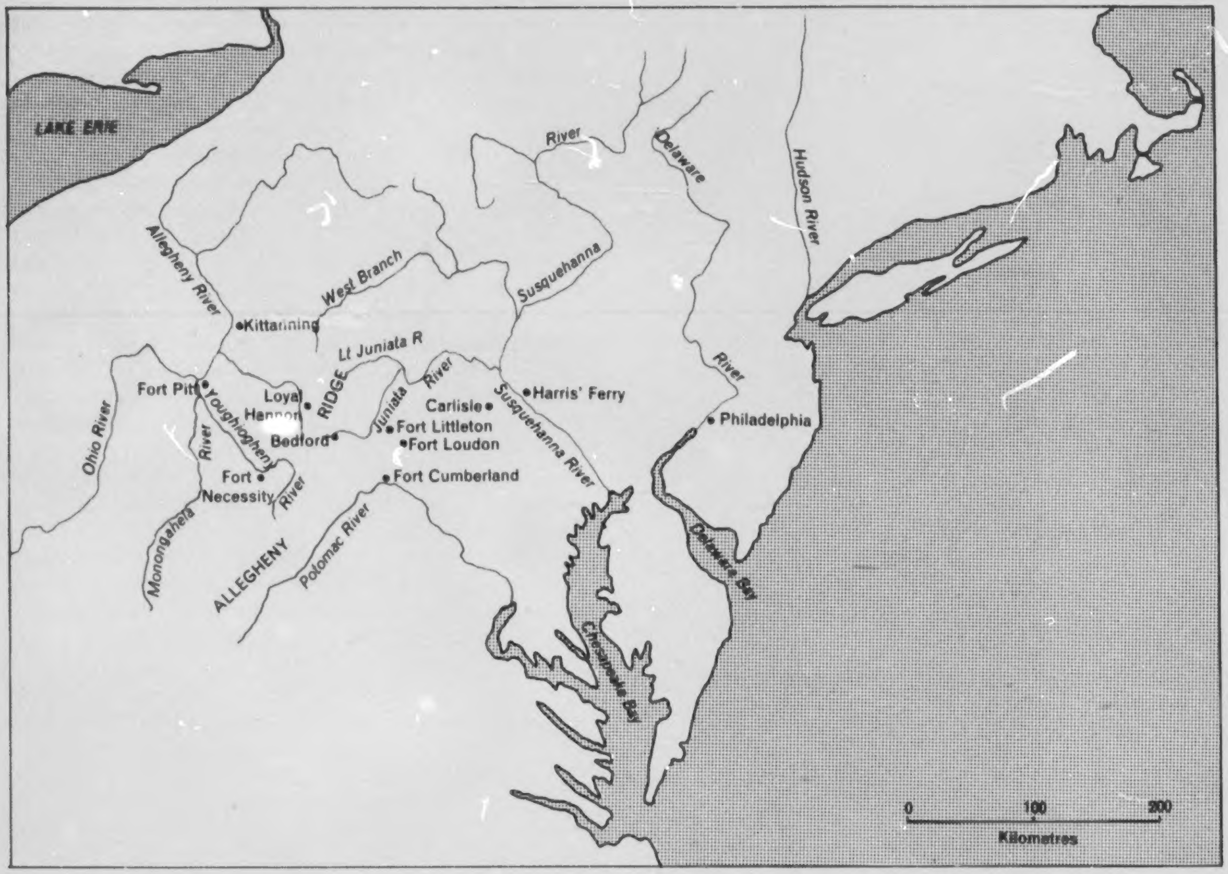

LAKE ERIE
Allegheny River
West Branch
River
Delaware
Hudson River
Susquehanna
Kittanning
Lt Juniata R
Fort Pitt
Loyal Hannon
RIDGE
Juniata River
Carlisle
Harris' Ferry
Susquehanna River
River
Philadelphia
Ohio River
River
Youghiogheny River
Bedford
Fort Littleton
Fort Loudon
Fort Cumberland
Fort Necessity
Monongahela
ALLEGHENY
Potomac River
Delaware Bay
Chesapeake Bay
0
100
200
Kilometres

Figure 5.10: Locations involved in the three overland routes converging on Fort Pitt (Pittsburgh)

sketch map to show the three major eighteenth century routes focusing on Pittsburgh.

Tracks through the mountains, blazed by the frontiersmen, trappers and pathfinders, became these routes which the earliest settlers followed; they, in turn, became the roads and turnpikes of these new western areas. As people moved westwards along these routes, they often decided to take up land before reaching Pittsburgh, settling in many of the valleys along the way. There they founded self-sufficient communities, clearing and farming the land.

By 1800 there was a network of transport routes along the coastal plain (figure 5.11). Most were roads, which grew where people needed them. By comparison with figure 5.10, can you tell which of the three routes to Pittsburgh grew most? The other type of transport was based on the rivers, which were often dredged and cleared of snags to make them navigable. Road transport was very slow and costly. For example, we complain today about our postal or taxi costs—compare what we pay with the rates listed in tables 5.1 and 5.2.

Table 5.1: Cost of delivery of single-sheet letters
(by Act of Congress, 2 March 1799)

Miles carried	Cost in cents
Not exceeding 40	8
40 to 90	10
90 to 150	12½
150 to 300	17
300 to 500	20
Over 500	25

Work out how much it would cost to send a letter of five separate sheets to a friend 400 miles (644 kilometres) distant, for these two times and places:

- the United States in 1799
- Australia in 1974.

What conclusions can you draw from such a calculation?

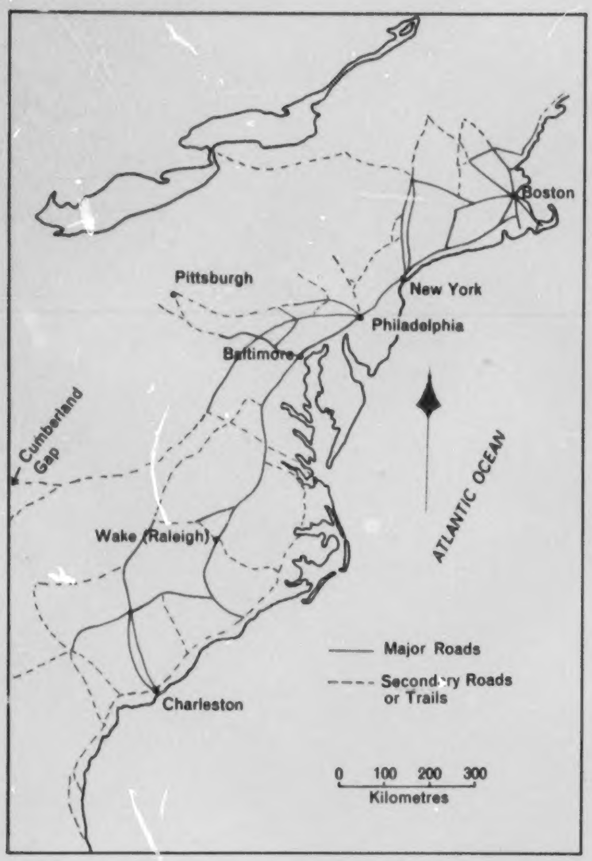


Figure 5.11: Transport routes, c. 1800

Table 5.2: Authorised toll rates in Connecticut, about 1800

	Rate for every 2 miles, in cents
Four-wheeled pleasure carriage	25
Chaise or sulky	12½
Loaded cart or sled	8
Empty cart or sled	6¼
Loaded wagon	12½
Empty wagon	6¼
Horses, cattle, and mules (each)	1
Pleasure sleighs, loaded	6¼
Pleasure sleighs, empty	3
Man and horse	4
Mail stage	6¼
Every other stage	25
Single-horse cart, loaded	6¼
Single-horse cart, empty	4

One of the most interesting accounts of the country through which these roads passed was written by Francis André Michaux. In this extract he describes the changes which had come to the old military post of Pittsburgh, and examines the two rivers which join to form the Ohio:

> . . . However, though this town has lost its importance as a military post, it has acquired a still greater one in respect to commerce. It serves as a staple for the different sorts of merchandise that Philadelphia and Baltimore send, in the beginning of spring and autumn, for supplying the states of Ohio, Kentucky, and the settlement of Natches.
>
> The conveyance of merchandise from Philadelphia to Pittsburgh is made in large covered waggons, drawn by four horses two a-breast. The price of carrying goods varies according to the season; but in general it does not exceed six piastres the quintal. They reckon it to be three hundred miles from Philadelphia to Pittsburgh, and the carriers generally make it a journey of from twenty to twenty-four days. The price of conveyance would not be so high as it really is, were it not that the waggons frequently return empty; notwithstanding they sometimes bring back, on their return to Philadelphia or Baltimore, fur skins that come from Illinois or ginseng [the root of a plant, used as a medicine], which is very common in that part of Pennsylvania.
>
> Pittsburgh is not only the staple of the Philadelphia and Baltimore trade with the western country, but of the numerous settlements that are formed upon the Monongahela and Alleghany. The territorial produce of that part of the country finds an easy and advantageous conveyance by the Ohio and Mississippi. Corn, hams and dried pork are the principal articles sent to New Orleans, whence they are re-exported into the Carribbees. They also export for the consumption of Louisiana, bar-iron, coarse linen, bottles manufactured at Pittsburgh, whiskey, and salt butter. A great part of these provisions come from Redstone, a small commercial town, situated upon the Monongahela, about fifty miles beyond Pittsburgh. The journey from Pittsburgh to New Orleans they compute to be two thousand one hundred miles. The barges in the spring season usually take forty or fifty days to make the passage, which two or three persons in a *pirogue* [an Indian boat] make in five-and-twenty days.
>
> The river Monongahela derives its source in Virginia, at the foot of Laurel Mountain, which comprises a part of the chain of the Alleghanies; bending its course toward the west, it runs into Pennsylvania, and before it reaches Alleghany it receives in its current the rivers Chéat and Youghiogheny, which proceed from the south west. The territory watered by this river is extremely fertile; and the settlements formed upon the banks are not very far apart. It begins to be navigable at Morgan Town, which is composed of about sixty houses, and is situated upon the right, within a hundred miles of its *embouchure*. . . . [New Geneva] has shoe and paper manufactories, several flour mills, and contains about five hundred inhabitants. At this town a great number of those who emigrate from the eastern states embark to go into the west. It is also famous for building large boats, called *Kentucky boats*, used in the Kentucky trade. . . .
>
> Alleghany takes its source fifteen or twenty miles from lake Eria; its current is enlarged by the French Creek, and various small rivers of less importance. The Alleghany begins to be navigable within two hundred miles of Pittsburgh. The banks of this river are fertile; the inhabitants who have formed settlements there export, as well as those

of Monongahela, the produce of their culture by the way of the Ohio and Mississippi.

F. A. Michaux, *Travels to the West of the Alleghany Mountains in the States of Ohio, Kentucky and Tennessee, and back to Charlestown, by the Upper Carolinas . . . undertaken in the year 1802* (London, 1805)

What use was made of these rivers, and how was this affecting the changing functions of Pittsburgh?

Does the following description of Pittsburgh, by the Rev. Thad. Mason Harris, agree or disagree with Michaux's description? What else does he tell us about the people's way of life?

Most of the articles of merchandize brought in waggons over the mountains in the summer season, and destined for the trade down the river, are stored at this place, to be ready for embarkation. With these a great many trading boats are laden, which float down the river, stopping at the towns on its banks to vend the articles. In a country, so remote from commerce, and of so great extent, where each one resides on his own farm, and has neither opportunity nor convenience for visiting a market, these trading boats contribute very much to the accommodation of life, by bringing to every man's house those little necessaries which it would be very troublesome to go a great distance to procure.

At and near this place, ship-building is an object of great attention. Several vessels are now on the stocks; and three have been launched this spring, from 160 to 275 tons burden.

The principal navigation of the Ohio river is during the floods of the spring and autumn. The spring season commences at the breaking up of the ice in the Alleghany, which generally happens about the middle of February, and continues for eight or ten weeks. The fall season is occasioned by the autumnal rains in October, and lasts till about the beginning of December, when the ice begins to form. . . .

In the time of the freshets the Ohio rises from fifteen to thirty feet, and sometimes even higher; overflowing its banks to a very considerable distance. The rise is generally sudden, often ten feet in twenty-four hours. . . . The flood maintains its greatest height about a week or ten days, and then gradually subsides, till the river is reduced to its usual depth. By spreading over the flat lands a rich coating of leaves, decayed vegetables, and loam, washed down by the rain from the sides of the hills, these inundations greatly promote the fertility of the soil. . . .

The inhabitants use the water of the river here and down the Ohio for drink and cookery, even in preference to the spring water from the hills; for as yet they have not practised the digging of wells. At first we were surprised at this preference; but they assured us that the river water was more wholesome and generally much more palatable. We were soon convinced that this must be the case. . . .

T. M. Harris, *The Journal of a Tour into the Territory Northwest of the Alleghany Mountains; Made in the Spring of the Year 1803. With a Geographical and Historical Account of the State of Ohio.* (Boston, 1805)

James Flint, a British traveller, believed that there were three different types of settler involved in the westward expansion:

All who have paid attention to the progress of new settlements, agree in stating, that the first possession of the woods in America, was taken by a class of hunters, commonly called backwoodsmen. These, in some instances, purchased the soil from the government, and in others, placed themselves on the public lands without permission. Many of them, indeed, settled new territories before the ground was surveyed, and before public sales commenced. Formerly pre-emption rights were given to these squatters; but the irregularities and complicacy that the practice introduced into the business of the land-office, have caused its being given up, and squatters are now obliged to make way for regular purchasers. The improvements of a backwoodsman are usually confined to building a rude log cabin, clearing and fencing a small piece of ground for raising Indian corn. A horse, a cow, a few hogs, and some poultry, comprise his live-stock; and his farther operations are performed with his rifle. The formation of a settlement in his neighbourhood is hurtful to the success of his favourite pursuit, and is the signal for his removing into more remote parts of the wilderness. In the case of his owning the land on which he has settled, he is contented to sell it at a low price, and his establishment, though trifling, adds much to the comfort of his successor.

The next class of settlers differ from the former in having considerably less dependence on the killing of game, in remaining in the midst of a growing population, and in devoting themselves more to agriculture. A man of this class proceeds on a small capital; he either enlarges the clearings begun in the woods by his backwoodsman predecessor, or establishes himself on a new site. On his arrival in a settlement, the neighbours unite in assisting him to erect a cabin for the reception of his family. . . . It is not in his power to hire labourers, and he must depend therefore on his own exertions. If his family is numerous and industrious, his progress is greatly accelerated. He does not clear away the forests by dint of labour, but girdles [ringbarks] the trees. By the second summer after this operation is performed, the foliage is completely destroyed, and his crops are not injured by the shade. He plants an orchard, which thrives and bears abundantly under every sort of neglect. His live-stock soon becomes much more numerous than that of his back-wood predecessor; but, as his cattle have to shift for themselves in the woods, where grass is scanty, they are small and lean. He does not sow grass seeds to succeed his crops, so that his land, which ought to be pasturage, is overgrown with weeds. The neglect of sowing grass-seeds deprives him of hay; and he has no fodder laid up for the winter except the blades of Indian corn, which are much withered, and do not appear to be nutritious food. The poor animals are forced to range the forests in winter. . . . Want of shelter in the winter completes the sum of misery. Hogs suffer famine during the droughts of summer, and the frosts and snows of winter; but they become fat by feeding on the acorns and beech nuts which strow the ground in autumn. Horses are not exempted from their share in these common sufferings, with the addition of labour, which most of them are not very able to undergo. This second rate class of farmers are to be seen in the markets of towns, retailing vegetables, fruits, poultry, and dairy produce. . . . Incidents of this kind may, perhaps, cause you to suppose that the condition of the second rate settler is similar to that of subtenants in the north of Scoltand, or in Ireland; but the high price of labour in America explains the apparent parity. Men perform offices for themselves that, in Britain, would be done by hiring others. The American farmer, it must be observed, is commonly the proprietor of the land he occupies; and, in the *hauteur* of independence, is not surpassed by the proudest freeholders of Britain. The settler of the grade under consideration, is only able to bring a small portion of his land into cultivation; his success, therefore, does not so much depend on the quantity of produce which he raises, as on the gradual increase in the value of his property. When the neighbourhood becomes more populous, he in general has it in his power to sell his property at a high price, and to remove to a new settlement, where he can purchase a more extensive tract of land, or commence farming on a larger scale than formerly.

The next occupier is a capitalist, who immediately builds a larger barn than the former, and then a brick or a frame house. He either pulls down the dwelling of his predecessor, or converts it into a stable. He erects better fences, and enlarges the quantity of cultivated land; sows down pasture fields, introduces an improved stock of horses, cattle, sheep, and these probably of the Merino breed. He fattens cattle for the market, and perhaps erects a flour-mill, or a saw-mill, or a distillery. Farmers of this description are frequently partners in the banks; members of the State assembly, or of Congress, or Justices of the Peace.

The condition of the people has necessarily some relation to the age and prosperity of the settlements in which they live. In Pennsylvania, for instance, the most extensive farmers are prevalent. In the earliest settled parts of Ohio and Kentucky, the first and second rate farmers are most numerous, and are mixed together. In Indiana, backwoodsmen and second rate settlers predominate. The three conditions of settlers described, are not to be understood as uniformly distinct; for there are intermediate stages, from which individuals of one class pass, as it were, into another. The first invaders of the forest [illegible] become farmers of the second order; and there are examples of individuals acting their parts in all the three gradations.

James Flint, *Letters from America* (Edinburgh, 1822)

The preceding quotation identifies these basic types of farmer:

- The backwoodsman
- The small landholder ('second rate settler')
- The capitalist farmer.

Write brief notes on the farming activities of each. From reading the quotation, you may be able to explain what is meant by the term 'sequent occupance'.

You may like to make three different models in the classroom to illustrate each type of farmer and his farm. (Consult pictures and descriptions in library books if you need help.)

Besides the natural pioneering instinct and the urge to exploit the opportunities offered by this virgin territory, the movement to the west was partly the result of pressure caused by immigration and the resulting population increase—the United States was a new country with cheap land available, and was attractive to people in Europe. As European immigrants arrived at the east coast ports, they put population pressure on the settled area. The input of people from the east meant that the western frontier had to be pushed further out. Between the 'input' and the 'outpush' was settlement of the land. Some people complained, however, that people were leaving the east because the government offered inducements to farm in the west, which those in the east did not receive. In addition, there was an incentive to look for new farmland because cropping in some areas, especially in the south, had been so heavy that soil fertility had been greatly depleted.

Morris Birkbeck witnessed the flood of family groups journeying to the west. What did he think of the land and the living conditions he saw?

We have now fairly turned our backs on the old world, and find ourselves in the very stream of emigration. Old America seems to be breaking up, and moving westward. We are seldom out of sight, as we travel on this grand track, towards the Ohio, of family groups, behind and before us, some with a view to a particular spot; close to a brother perhaps, or a friend, who has gone before and reported well of the country. Many like ourselves, when they arrive in the wilderness, will find no lodge prepared for them.

A small waggon (so light that you might almost carry it, yet strong enough to bear a good load of bedding, utensils and provisions, and a swarm of young citizens—and to sustain marvellous shocks in its passage over these rocky heights) with two small horses; sometimes a cow or two, comprises their all; excepting a little store of hard-earned cash for the land office of the district; where they may obtain a title for as many acres as they possess half-dollars, being one fourth of the purchase-money. The waggon has a tilt, or cover, made of a sheet, or perhaps a blanket. The family are seen before, behind, or within the vehicle, according to the road or the weather, or perhaps the spirits of the party.

The New Englanders, they say, may be known by the cheerful air of the women advancing in front of the vehicle; the Jersey people, by their being fixed steadily within it; whilst the Pennsylvanians creep lingering behind, as though regretting the homes they have left. A cart and single horse frequently affords the means of transfer, sometimes a horse and pack-saddle. Often the back of the poor pilgrim bears all his effects and his wife follows, naked-

> footed, bending under the hopes of the family....
>
> This is a land of plenty, and we are proceeding to a land of *abundance*, as is proved by the noble droves of oxen we meet, on their way from the western country, to the city of Philadelphia. They are kindly, well-formed, and well-fed animals, averaging about six cwt....
>
> The taverns in the great towns, east of the mountains, which lay in our route, afford nothing in the least corresponding with our habits and notions of convenient accommodation: the only similarity is in the expence.
>
> At these places all is performed on the gregarious plan: every thing is public by day and by night—for even night in an American inn affords no privacy. Whatever may be the number of guests, they must receive their entertainment *en masse*, and they must sleep *en masse*.... Soon after [supper] you assemble... in rooms crowded with beds, something like the wards of a hospital; where, after undressing in public, you are fortunate if you escape a partner in your bed, in addition to the myriads of bugs, which you need not hope to escape.
>
> But the horrors of the kitchen, from whence issue... shoals of dishes, how shall I describe, though I have witnessed them—it is a dark and sooty hole, where the idea of cleanliness never entered....
>
> Morris Birkbeck, *Notes on a Journey in America*
> (London, 1818)

By 1815, the tide of settlement—farming and town construction—had reached the junction of the Illinois and Mississippi Rivers (figure 5.12). The Ohio River was the natural highway to the west, and new settlers travelled the waterway in all sorts of boats until they wished to strike away from the river to find suitable land. As they moved to the west, the new settlers found the vegetation changing from an environment where trees were dominant to a different type (figure 5.13).

A change in the organisation of settlement was also becoming apparent. Instead of settlers always moving in families or small private groups on their own initiative, large groups or companies often purchased land from the government, and planned settlement occurred in these areas. Indian claims to their tribal lands temporarily slowed down the westward development, while the government made a series of treaties to resolve the problem. However, the settlers inevitably crossed the treaty lines in their drive to the west, giving rise to armed conflict with the Indians and constant revision of treaties.

By the early 1830s, settlement was spreading from Illinois and Missouri into Wisconsin and Iowa. (Some of the settlement in South Wisconsin was prompted by the development of lead mines around Galena.) In 1832 the government purchased from Black Hawk, a leader of the Indians, nearly all the land within 80 kilometres of the west bank of the Mississippi River (figure 5.14). Settlers spread rapidly into the 'Black Hawk Purchase' from the south-east. By 1833, Burlington and Dubuque had become established as towns, and by 1836 the whole of the Purchase was covered with settlements. A new purchase in 1837 opened the way for more development; by 1839, settlers had moved far up the Des Moines, Iowa and Cedar Rivers, while on the Missouri River settlement had advanced past Council Bluffs. However, settling the land still did not guarantee ownership. Settlers had to survive claim-jumping, and raise money to buy the land they had settled at land sales, as the following extract shows:

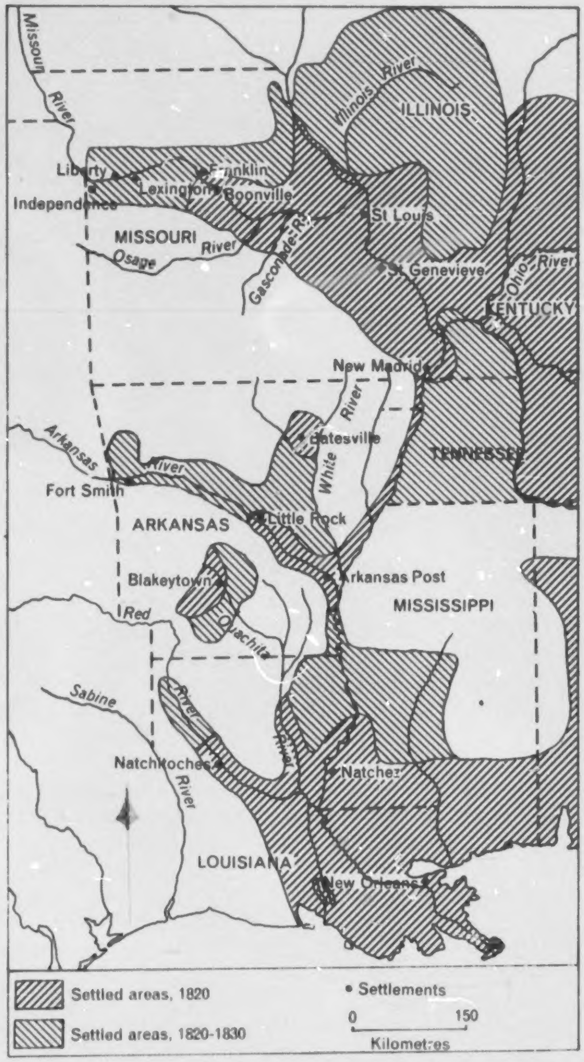

Missouri River
Liberty
Independence
Lexington
Franklin
Boonville
MISSOURI
River
Osage
Gasconade R.
Illinois River
ILLINOIS
St Louis
St Genevieve
Ohio River
KENTUCKY
New Madrid
White River
Batesville
TENNESSEE
Arkansas River
Fort Smith
ARKANSAS
Little Rock
Arkansas Post
Blakeytown
Red
Ouachita
MISSISSIPPI
Sabine
River
Natchitoches
River
Natchez
LOUISIANA
New Orleans
▨ Settled areas, 1820
▨ Settled areas, 1820-1830
• Settlements
0 150
Kilometres

Figure 5.12: The spread of settlement to 1830. Apart from the westward move in the north, in what other direction were people moving into the western plains? How important were rivers in both cases?

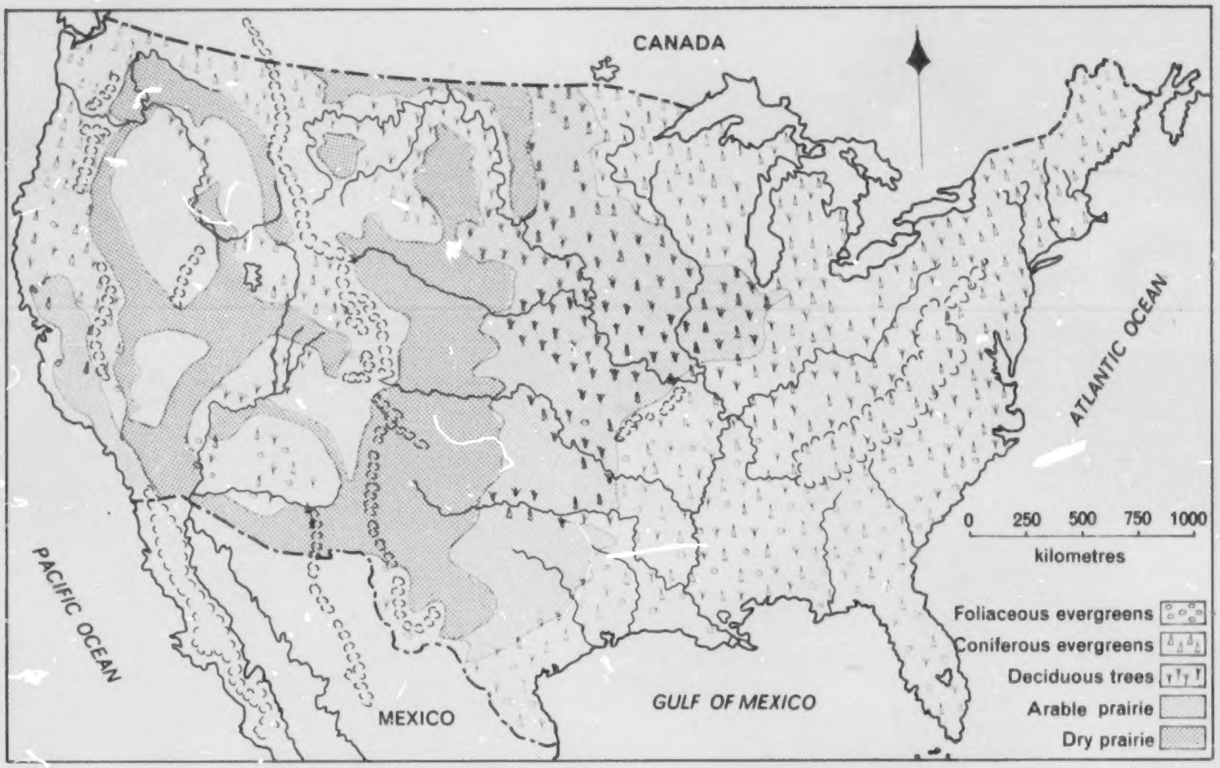
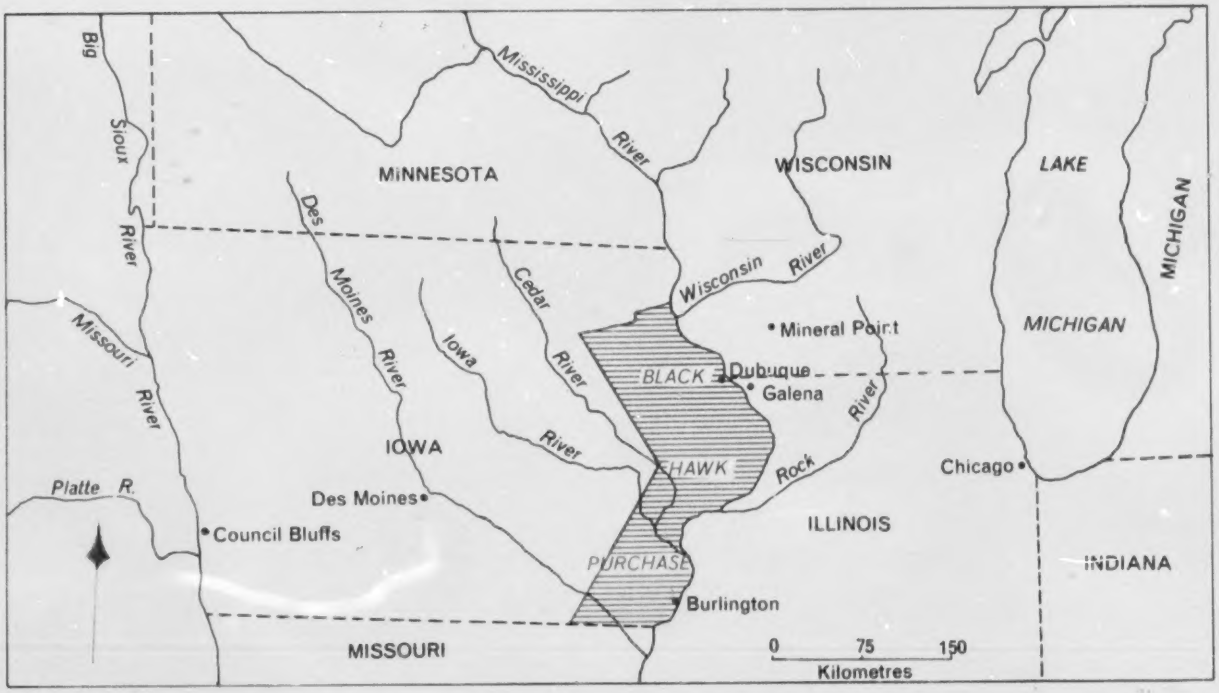

CANADA
ATLANTIC OCEAN
PACIFIC OCEAN
MEXICO
GULF OF MEXICO
0 250 500 750 1000
kilometres
Foliaceous evergreens
Coniferous evergreens
Deciduous trees
Arable prairie
Dry prairie

Figure 5.13: Forest and prairie lands of the United States (from a map drawn in 1857). How did the vegetation of the earlier-settled areas in the east differ from that of the new areas to the west?

Figure 5.14: Locations of early settlements in Iowa


Big Sioux River
Mississippi River
MINNESOTA
WISCONSIN
LAKE MICHIGAN
MICHIGAN
Des Moines River
Iowa River
Cedar River
Wisconsin River
Missouri River
Mineral Point
BLACK HAWK PURCHASE
Dubuque
Galena
Rock River
IOWA
Chicago
Platte R.
Des Moines
Council Bluffs
ILLINOIS
INDIANA
Burlington
MISSOURI
0 75 150
Kilometres

The great mass of people east of the Alleghanies, I apprehend, have but little idea of a western land sale. Many are the ominous indications of its approach among the 'settlers'. Every dollar is sacredly treasured up. . . . At length the wished-for day arrives. The suburbs of the town present the scene of a military camp. The settlers have flocked from far and near. . . . The sale being announced from the land office, the township bidder stands near by with the registry book in hand, and each settler's name attached to his respective quarter or half section, and thus he bids off in the name of the whole township for each respective claimant. A thousand settlers are standing by, eagerly listening when *their* quarter shall be called off. The crier has passed the well-known numbers. His home is secure. He feels relieved. The litigation of 'claim-jumping' is over forever. He is lord of the soil. With an independent step he walks into the land-office, opens the time-worn saddlebags, and counts out the 200 or 400 dollars, silver and gold, takes his certificate from the general government, and goes his way rejoicing.

J. B. Newhall, *Sketches of Iowa, or the Emigrant's Guide* (New York, 1841)

Farmers faced new problems in these treeless areas from Illinois to the west. Further east they had come to think that the more trees there were, the richer the land; they had used wood for everything from homes to fences. There were also fewer streams in the west. Nevertheless, many settlers, especially those from Europe who were not so prejudiced, recognised the value of this area.

Morris Birkbeck, the Englishman who earlier described the journey west, settled in Illinois, where land conditions were similar to those in Iowa. What did he think of the soils and the land?

I have secured a considerable tract of land, more than I have any intention of holding, that I may be able to accommodate some of our English friends. Our soil appears to be rich, a fine black mould, inclining to sand, from one to three or four feet deep, lying on sandstone or clayey loam; so easy of tillage as to reduce the expense of cultivation below that of the land I have been accustomed to in England, notwithstanding the high rates of human labour. The wear of plough-irons is so trifling, that it is a thing of course to sharpen them in the spring once for the whole year. Our main object will be live stock, cattle, and hogs, for which there is a sure market at a good profit. Twopence a pound you will think too low a price to include a profit; but remember, we are not called upon, after receiving our money for produce, to refund a portion of it for rent, another portion for tithe, a third for poor's rates, and a fourth for taxes; which latter are here so light as scarcely to be brought into the nicest calculation. You will consider also, that money goes a great deal farther here, so that a less profit would suffice. The fact is, however, that the profits on capital employed any way in this country are marvellous: in the case of livestock the outgoings are so small, that the receipts are nearly all clear.

The idea of exhausting the soil by cropping, so as to render manure necessary, has not yet entered into the estimates of the western cultivator. Manure has been often known to accumulate until the farmers have removed their yards and buildings out of the way of the nuisance. They have no notion of making a return to the land, and as yet there seems no bounds to its fertility.

For about half the capital that is required for the mere cultivation of our worn-out soils in England, a man may establish himself as a proprietor here, with every comfort belonging to a plain and reasonable mode of living, and with a certainty of establishing his children as well or better than himself — such an approach to certainty at least as would render *anxiety* on that score unpardonable.

Morris Birkbeck, *Letters from Illinois* (London, 1818)

A settler in Iowa, Nathan Parker, wrote this description of the prairie country. Does he agree with Birkbeck? How? Does he add anything to Birkbeck's comments?

This State is located in the healthiest latitude of our continent; reaching only to latitude 43° 30′ on its northern boundary. Its winters are comparatively mild and pleasant, and its summers free from the long scorching rays of a southern sun and the epidemics so common in such climates. . . .

The novelty of the prairie country is striking, and never fails to cause an exclamation of surprise from those who have lived amid the forests of Ohio and Kentucky, or along the wooded shores of the Atlantic, or in sight of the rocky barriers of the Allegheny ridge. The extent of the prospect is exhilarating. The outline of the landscape is undulating and graceful. The verdure and the flowers are beautiful; and the absence of shade, and consequent appearance of a profusion of light, produces a gaiety which animates every beholder.

These plains, although preserving a general level in respect to the whole country, are yet, in themselves, *not flat*, but exhibit a gracefully waving surface, swelling and sinking with easy, graceful slopes, and full, rounded outlines, equally avoiding the unmeaning horizontal surface, and the interruption of abrupt or angular elevations.

The attraction of the prairie consists in its extent, its carpet of verdure and flowers, its undulating surface, its groves, and the fringe of timber by which it is surrounded. Of all of these, the latter is the most expressive feature. It is that which gives character to the landscape, which imparts the shape, and marks the boundary of the plain. If the prairie be small, its greatest beauty consists in the vicinity of the surrounding margin of woodland, which resembles the shore of a lake indented with deep vistas, like bays and inlets, and throwing out long points, like capes and headlands.

In the spring of the year, when the young grass has just covered the ground with a carpet of delicate green, and especially if the sun is rising from behind a distant swell of the plain and glittering upon the dewdrops, no scene can be more lovely to the eye. The groves, or clusters of timber, are particularly attractive at this season of the year.

> The rich undergrowth is in full bloom. The rosewood, dogwood, crab-apple, wild plum, the cherry, and the wild rose are all abundant, and in many portions of the State the grape-vine abounds. . . .
>
> In the summer, the prairie is covered with long, coarse grass, which soon assumes a golden hue, and waves in the wind like a fully ripe harvest. The prairie-grass never attains its highest growth in the richest soil; but in low, wet, or marshy land, where the substratum of clay lies near the surface, the centre or main stem of the grass — that which bears the seed — shoots up to the height of eight and ten feet, throwing out long, coarse leaves or blades. But on the rich, undulating prairies, the grass is finer, with less of stalk and a greater profusion of leaves. The roots spread and interweave, forming a compact, even sod, and the blades expand into a close, thick grass, which is seldom more than eighteen inches high, until late in the season, when the seed-bearing stem shoots up. The first coat is mingled with small flowers — the violet, the bloom of the wild strawberry, and various others, of the most minute and delicate texture. As the grass increases in height, these smaller flowers disappear, and others, taller and more gaudy, display their brilliant colors upon the green surface; and still later, a larger and coarser succession arises with the rising tide of verdure. It is impossible to conceive a more infinite diversity, or a richer profusion of hues, 'from grave to gay', than graces the beautiful carpet of green throughout the entire season of summer.
>
> N. Parker, *Iowa As It Is in 1855* (Chicago, 1855)

When the farmers and scientists examined the prairie soil, they found that its colour ranged from dark brown to black. This showed the presence of a large amount of humus (decaying grass material). When they discovered that this dark soil grew better crops than the lighter-coloured soils in the forests along the rivers, they began to realise its full value. However, until farmers were convinced of this, they preferred to clear the timber around forests and use this land for cultivation, rather than ploughing the prairie soil.

Try to describe, as accurately as possible, the prairie soils referred to by the writers of the last two quotations. Use these headings:

- Colour
- Depth
- Humus or organic content
- Moisture content
- Fertility.

By 1850, settlement in the north had pushed halfway across Iowa (figure 5.15). Can you think of any reason why settlement had not crossed the Missouri, although settlers had reached the river twenty years earlier?

Where did these settlers come from? Did the new immigrants from Europe to the east coast push the earlier settlers to the west, or did the immigrants move directly to the west? Look at figures 5.16 and 5.17. What do you think the answers to these questions are?

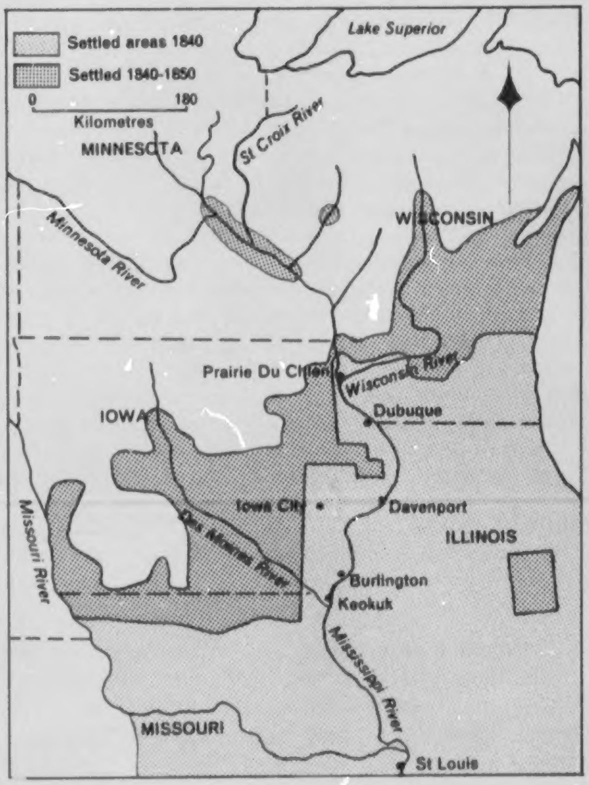


Figure 5.15: The spread of settlement to 1850

What were these settlers like? The average age of the farmers in one county was 42–43 years; the pioneer settlers were not, apparently, young men just married, but mature men, who had started their families before they arrived in Iowa.

People had thought that in the eastern areas the nature of the settler population in various places changed over time—the pioneers who arrived first soon left, to be replaced by other settlers, who in turn might later themselves leave (refer back to James Flint's observations on page 95). The graphs in figure 5.18 show the situation with settlers in Iowa. Is it similar to or different from what happened further east?

When settlers arrived on their land the first thing they did was build a house. One family in Iowa erected 'a rude log cabin, sixteen by sixteen feet, with puncheon floor, clay fireplace and mud and stick chimney . . .'. Soon more substantial wooden or brick houses followed, with a variety of farm buildings—corncribs, barns, and stables—although these tended to be roughly constructed, as farmers had no machinery, and few had any idea of feeding animals in barns.

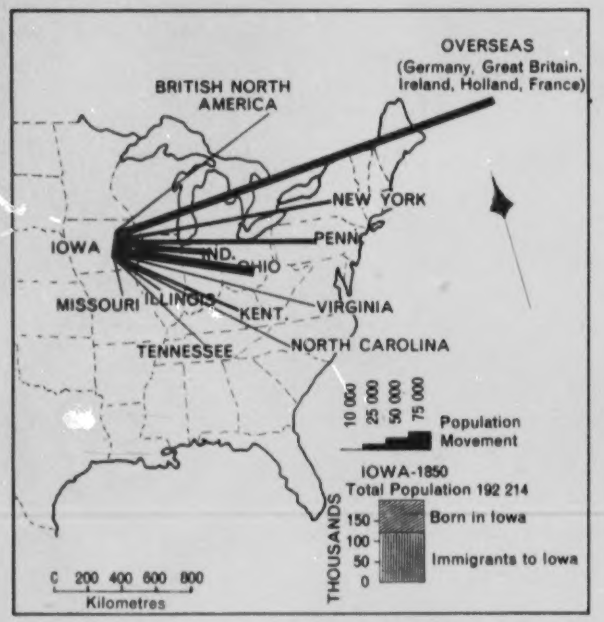

OVERSEAS
(Germany, Great Britain, Ireland, Holland, France)
BRITISH NORTH AMERICA
NEW YORK
PENN.
IOWA
IND.
OHIO
MISSOURI
ILLINOIS
KENT.
VIRGINIA
TENNESSEE
NORTH CAROLINA
10 000
25 000
50 000
75 000
Population Movement
IOWA-1850
Total Population 192 214
THOUSANDS
150
100
50
0
Born in Iowa
Immigrants to Iowa
0 200 400 600 800
Kilometres

Figure 5.16: Birthplace of people living in Iowa, 1850

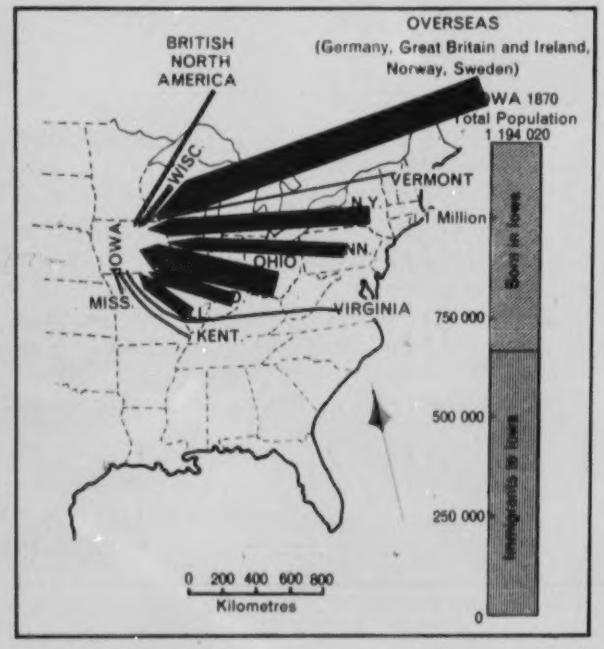

OVERSEAS
(Germany, Great Britain and Ireland, Norway, Sweden)
BRITISH NORTH AMERICA
OWA 1870
Total Population
1 194 020
WISC.
VERMONT
N.Y.
1 Million
IOWA
NN.
OHIO
MISS.
VIRGINIA
KENT.
750 000
500 000
250 000
0
Born in Iowa
Immigrants to Iowa
0 200 400 600 800
Kilometres

Figure 5.17: Birthplace of people living in Iowa, 1870

To what use did these first settlers in Iowa put the land? A number of different kinds of evidence are provided in figures 5.19–5.23 and table 5.3—graphs, maps and statistics. Look through them and try to describe what a typical farm in Iowa was like. What changes were occurring as time went on?

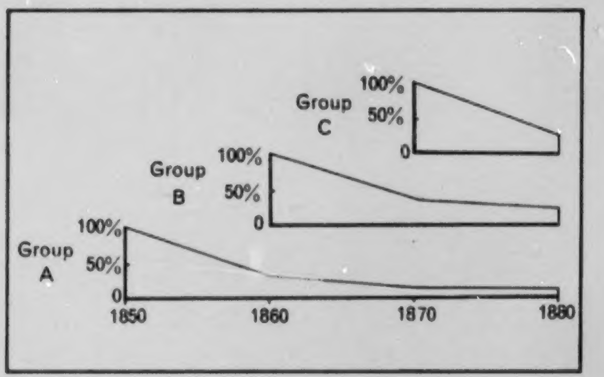


Figure 5.18: These graphs show what happened to three groups of Iowa farmers. In 1850, all of Group A lived in Iowa—by 1860, 1870 and 1880, how many still lived there?

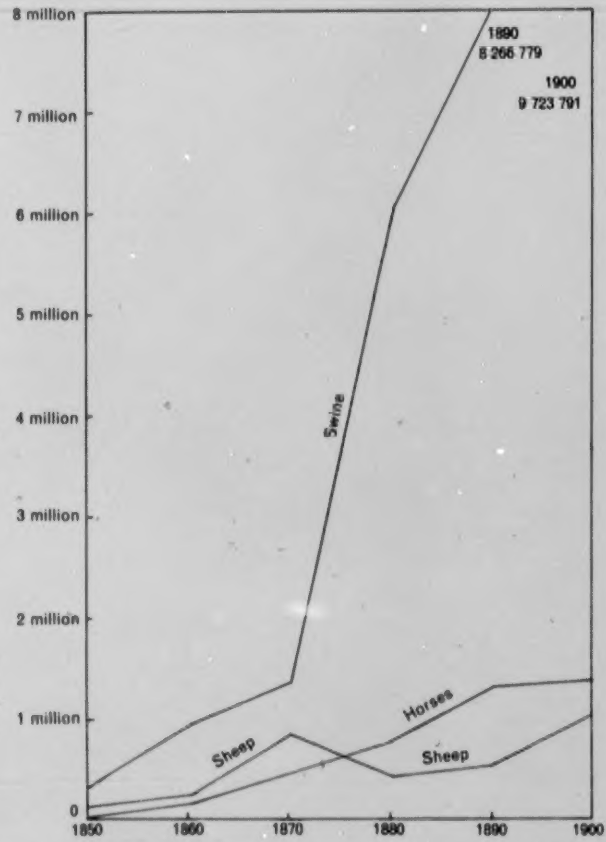


Figure 5.19: Swine, sheep and horses in Iowa, 1850–1900

One thing you will have noticed from the data provided was the importance of swine or hogs, and of corn. A hog is very efficient as a food producer, gaining 1 kilogram of weight for every 3·5 kilograms of feed, whereas calves require 16 kilograms of feed to gain 1 kilogram of weight. After slaughtering and dressing, a hog weighs

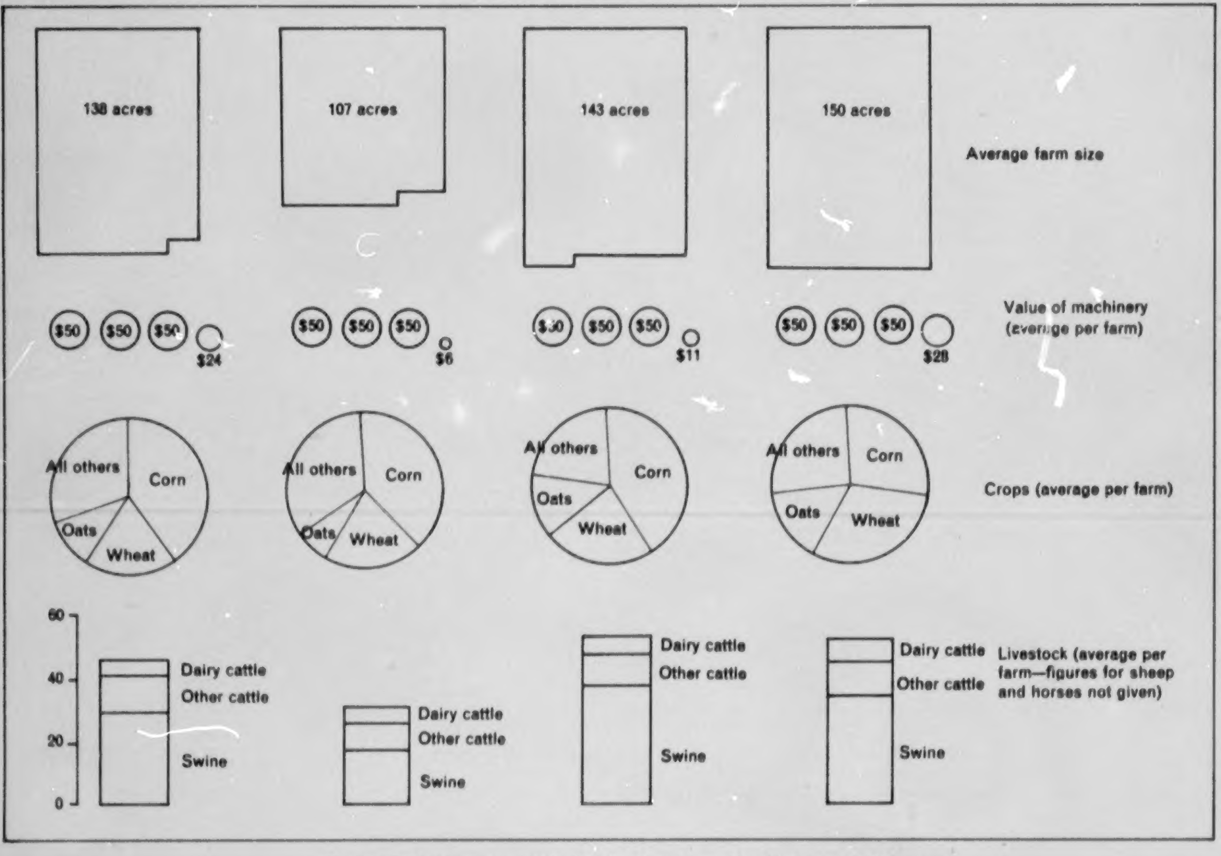


Figure 5.20: Farming statistics for four counties in Iowa, 1880

Table 5.3: Production statistics, 101 farmers in Cedar County, Iowa, census years 1850, 1880

	No. of farmers reporting		Medians	
	1850	1880	1850	1880
Acres per farm	101	101	120 acres	160 acres
Improved acres	101	101	50 acres	150 acres
Farm values	101	101	$700	$5200
Value of livestock	101	101	$220	$900
Horses and mules	97	100	2	6
Work oxen	25	0	0	0
Milk cows	99	98	3	4
Other cattle	78	75	3	5
Sheep	59	7	7	0
Swine	98	97	16	72
Wheat	98	71	180 bus.	30 bus.
Indian corn	98	96	400 bus.	2800 bus.
Rye	1	8	0	0
Flax	4	0	0	360 bus.
Oats	69	83	50 bus.	0
Barley	6	15	0	0
Buckwheat	14	8	0	0
Clover seed	2	5	0	0
Grass seed	4	14	0	0
Hay	99	90	8 tons	2 tons
Butter	89	98	100 lb	350 lb
Cheese	13	0	0	0

Source: United States Census of Agriculture, 1850, 1880

65–80 per cent of its original weight, while cattle only retain 50–60 per cent and sheep 45–55 per cent. In breeding, also, a sow can produce two large litters a year, while a cow can only produce offspring (no more than two calves) every nine months.

Some farmers thought that the fertile prairie was not suited to wheat. The cold winters and the problem of diseases in the case of wheat, compared to corn's reliability, caused the latter to be dominant—especially since it could be fed to hogs (or rather, they could just 'hog down' the corn as it grew in the fields). Nevertheless, wheat growers continued to try new wheat types, especially spring wheat, which could be planted after the cold winter when the ground was often covered with snow.

Farmers who brought their tools and equipment with them from the east found that the 'sod' of the prairie was too tough for their cast-iron ploughs, and so more changes had to occur. New steel ploughs were invented, and these were often mounted on a wheeled frame or sulky, so that the farmer could sit down as he ploughed. Other inventions also began to help the farmer—mech-

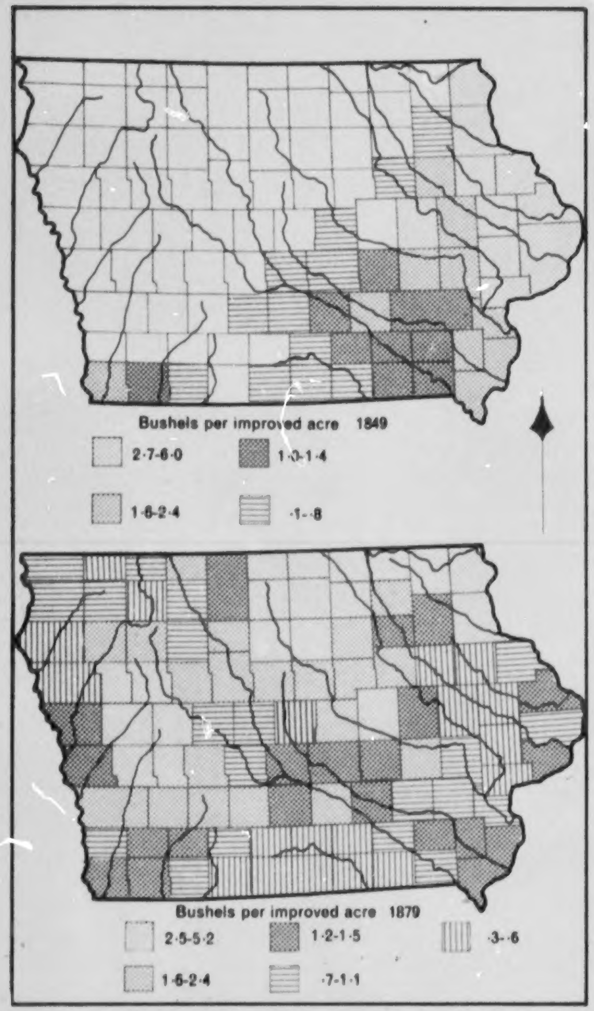

Bushels per improved acre 1849
2·7-6·0
1·0-1·4
1·6-2·4
·1-·8
Bushels per improved acre 1879
2·5-5·2
1·2-1·5
·3-·6
1·6-2·4
·7-1·1

Figure 5.21: Wheat production in Iowa in 1849 and 1879

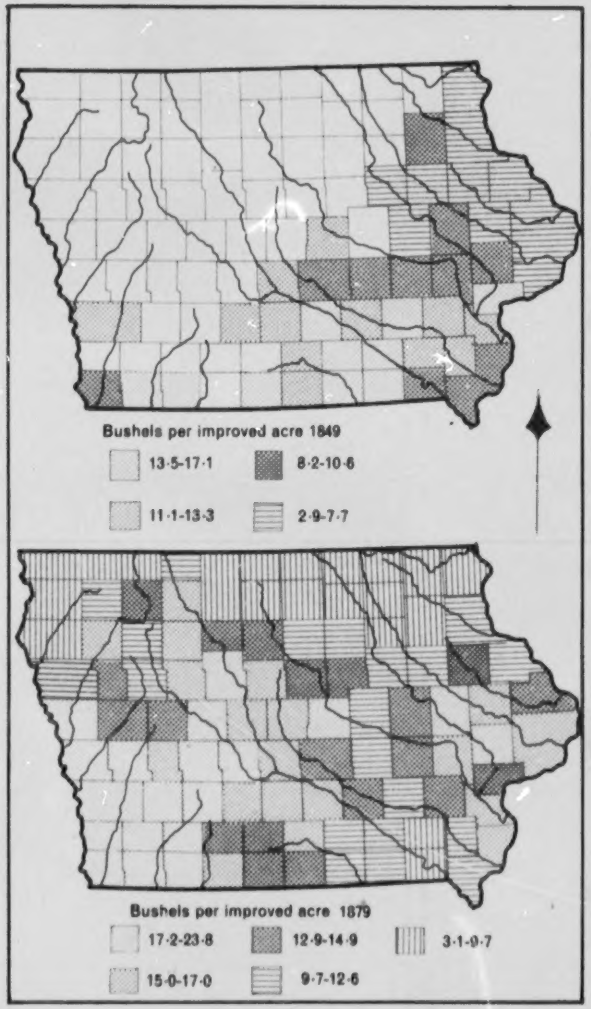

Bushels per improved acre 1849
13·5-17·1
8·2-10·6
11·1-13·3
2·9-7·7
Bushels per improved acre 1879
17·2-23·8
12·9-14·9
3·1-9·7
15·0-17·0
9·7-12·6

Figure 5.22: Corn production in Iowa in 1849 and 1879

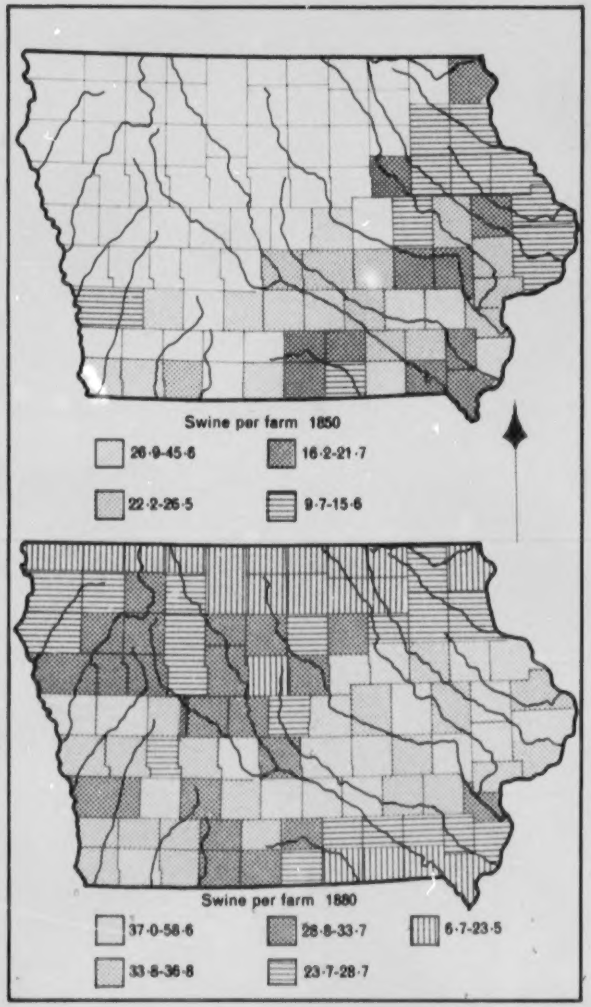

Swine per farm 1850
26·9-45·6
16·2-21·7
22·2-26·5
9·7-15·6
Swine per farm 1880
37·0-58·6
28·8-33·7
6·7-23·5
33·8-36·8
23·7-28·7

Figure 5.23: Swine in Iowa in 1850 and 1880

anical reapers, sowers and hay-loaders. However, the new inventions were expensive, as table 5.4 shows. (Compare with the values of farm and livestock in table 5.3.)

Table 5.4: Farm equipment, 1862

3 ploughs fitted for work (steel ploughs are best)	$34
1 subsoil plough; 1 double Michigan plough	24
1 one-horse plough; 2 cultivators	22
1 harrow, $12; 1 roller, $10	22
1 corn-planter; 1 seed-drill	15
1 wheat-drill, $65; 1 fanning-mill, $25	90
1 root-slicer; 1 straw-cutter	20
1 horse-rake; 2 hand-rakes	10
2 farm wagons; 1 one-horse cart	190
hayrack, harness, etc., for cart	38
1 sled and fixtures, $30; 1 combined mower and reaper, $125	155
2 scythes; 1 grain-cradle	7
1 shovel; 1 scoop-shovel; 2 spades	5
2 manure-forks; 4 hay-forks	6
1 horse-fork for hay, $10; 1 pointed shovel, $1	11
1 pick; 1 crowbar	3
2 ladders; 2 sheep-shears	5
large and small steelyards, $3; half bushel, $1	4
1 maul and wedges; 1 axe; 1 wood-saw	4
1 wheelbarrow; 1 grindstone	8
hand-hoes, baskets, stable lantern, currycomb, hammer, etc.	5
1 endless-chain horse-power threshing-machine and separator	160
1 circular saw	30
platform scales for weighing cattle, hay, etc.	100
TOTAL	$968

Source: Report of the U.S. Commissioner of Agriculture, 1862

Expenditure on equipment could only be justified if it saved labour costs. Labourers often asked as much as $3 per day for their services, but the farmer on an average-sized block of land seldom needed a hired man on a year-round basis. The heaviest period was mid-June to mid-August, when the cycle from ploughing to harvesting was in full swing. In one county in Iowa in 1869, over half of the farmers hired labour at an average cost of $150. Of course, the whole family—especially teenage boys—helped on the farm where possible; neighbours also lent a hand on a mutual basis. Without machinery, however, the farmers' labour demands would have been much greater. Compare the machinery listed in table 5.4 with that evident in the painting of the Massachusetts farm (figure 5.5, page 89). What changes had taken place?

Settlement affected not only the landscape, but also the native animals. Look at the maps in figure 5.24. What happened to the distribution of bison from 1800 to 1875?

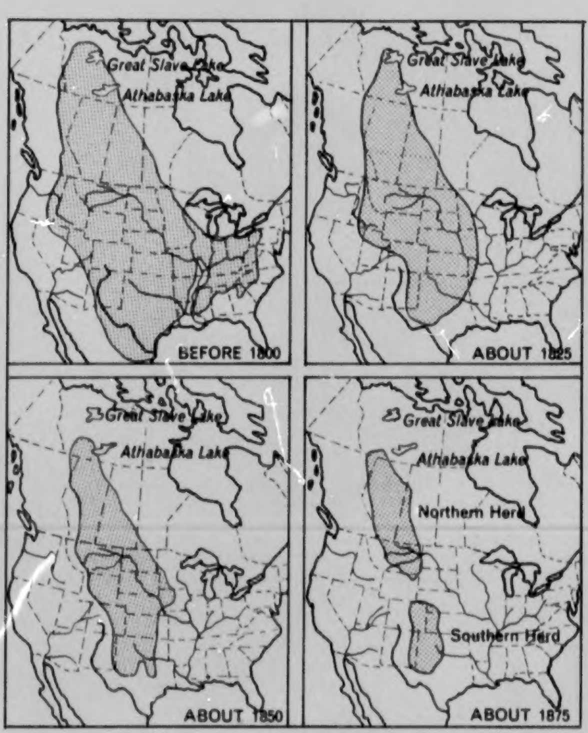


Figure 5.24: Distribution of bison in North America, 1800–75

In the late 1840s, a new force attracted people westwards. In California, gold was discovered, and streams of hopeful easterners now journeyed right across the western plains through the mountains to the goldfields. This movement was different from what had already happened. Previously people travelled westwards as settlement grew denser to the east and they looked for new or better land to farm; it was suggested that this had produced a 'frontier' of settlement. How was the movement of gold-seekers different?

A number of routes across the plains were established by explorers and trailblazers. Follow the trails on figure 5.25 from the following descriptions, and make a map of the routes for yourself.

Both the two major trails started from Independence, Missouri. The southern trail went straight to the Arkansas River at Pawnee Rock. At Cimarron Crossing it divided into two branches, one running virtually straight to Sante Fe, the other along the Arkansas River to Bent's Fort, whence it turned south to Sante Fe after rounding the mountains. The trail then divided again. One route turned north along the Dolores River, crossing the Grand River and the Green River; it then turned west as far as the Sevier River and followed the Virgin River downstream, until just before its junction with the Colorado River. It finally moved

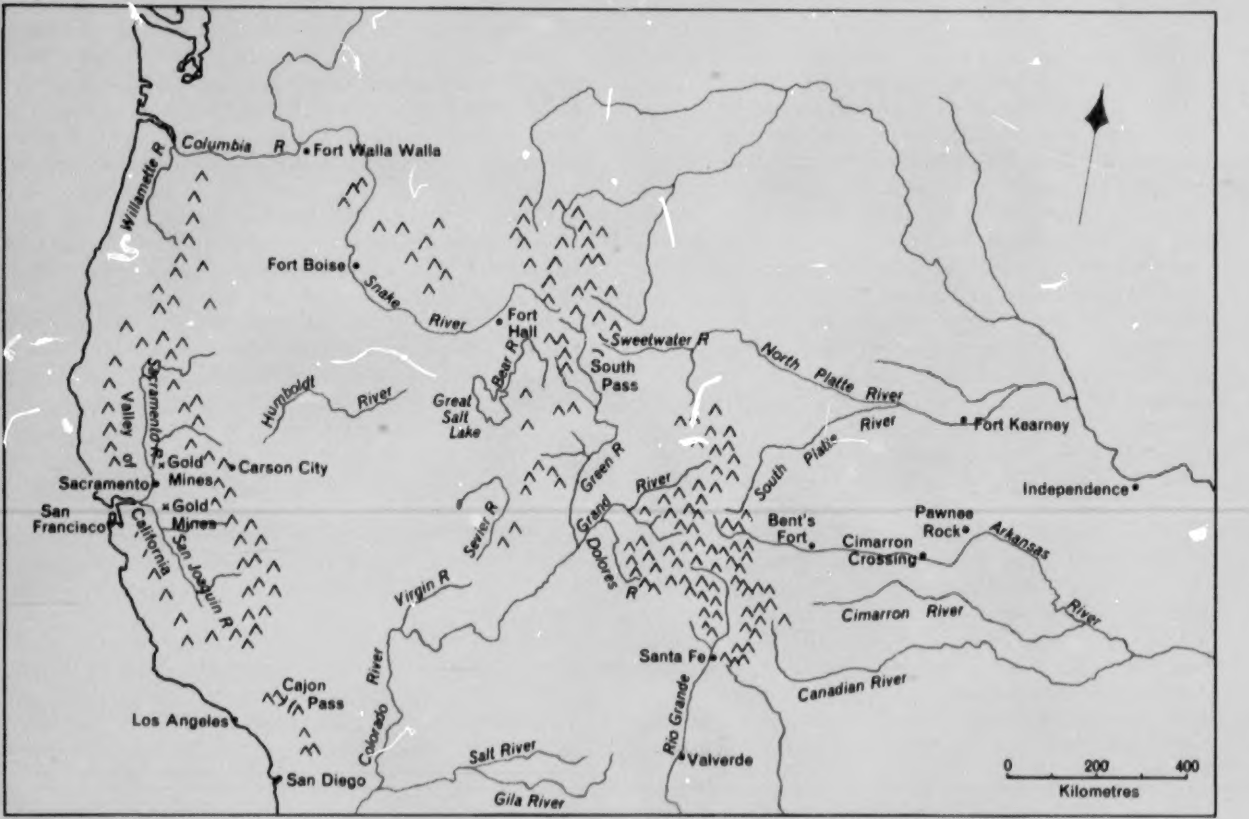

Columbia R
Fort Walla Walla
Willamette R
Fort Boise
Snake River
Fort Hall
Sweetwater R
South Pass
North Platte River
Bear R
Great Salt Lake
Humboldt River
Valley of California
Sacramento R
Gold Mines
Carson City
Sacramento
San Francisco
Gold Mines
San Joaquin R
Sevier R
Green R
Grand River
South Platte River
Fort Kearney
Independence
Bent's Fort
Pawnee Rock
Arkansas River
Cimarron Crossing
Dolores R
Virgin R
Cimarron River
Santa Fe
Canadian River
Colorado River
Cajon Pass
Los Angeles
Rio Grande
Valverde
Salt River
San Diego
Gila River
0
200
400
Kilometres

Figure 5.25: Locations of places involved in routes to the west coast

to the west, through the Cajon Pass to Los Angeles. The other branch from Sante Fe followed the Rio Grande down to Valverde, and then turned west and followed the Gila River to the Colorado River. There it left the river and crossed the final mountain range to the sea at San Diego.

The northern trail left Independence and joined the Platte River at Fort Kearney. It followed the North Platte and Sweetwater Rivers up to South Pass, where it changed direction to the south-west to meet the headwaters of Bear River. As the trail moved along Bear River, one branch left the river valley for Fort Hall on the Snake River. It followed the Snake River downstream to Fort Boise, where it struck to the north-west across country to Fort Walla Walla, and then followed the Columbia River to the west coast. The other branch followed Bear River to the Great Salt Lake and then crossed west to the headwaters of the Humboldt River, following this until it finished at another inland lake. The trail then went on to Carson City and crossed the mountains into the Valley of California.

These trails became part of the routes for the Pony Express, carrying the overland mail, and for the stagecoaches transporting passengers, supplies and gold between east and west. Along these routes the forerunners of modern motels and service stations were established, often at river crossings. (Why would such locations have been selected?) The early settlers often grazed cattle around these first central places.

Samuel Clemens (better known as 'Mark Twain') travelled along one of the overland routes by coach, and wrote this description of the Pony Express. What did he think of it? What were some of the dangers the riders faced?

> In a little while all interest was taken up in stretching our necks and watching for the 'pony-rider'— the fleet messenger who sped across the continent from St. Joe to Sacramento, carrying letters nineteen hundred miles in eight days! Think of that for perishable horse and human flesh and blood to do! The pony-rider was usually a little bit of a man, brimful of spirit and endurance. No matter what time of the day or night his watch came on, and no matter whether it was winter or summer, raining, snowing, hailing, or sleeting, or whether his 'beat' was a level straight road or a crazy trail over mountain crags and precipices, or whether it led through peaceful regions or regions that swarmed with hostile Indians, he must be always ready

to leap into the saddle and be off like the wind! There was no idling-time for a pony-rider on duty. He rode fifty miles without stopping, by daylight, moonlight, starlight, or through the blackness of darkness — just as it happened. He rode a splendid horse that was born for a racer and fed and lodged like a gentleman; kept him at his utmost speed for ten miles, and then, as he came crashing up to the station where stood two men holding fast a fresh, impatient steed, the transfer of rider and mail-bag was made in the twinkling of an eye, and away flew the eager pair and were out of sight before the spectator could get hardly the ghost of a look. Both rider and horse went 'flying light'. The rider's dress was thin, and fitted close; he wore a 'roundabout', and a skullcap, and tucked his pantaloons into his boot-tops like a race-rider. He carried no arms — he carried nothing that was not absolutely necessary, for even the postage on his literary freight was worth *five dollars a letter*. He got but little frivolous correspondence to carry — his bag had business letters in it, mostly. His horse was stripped of all unnecessary weight, too. He wore a little wafer of a racing-saddle, and no visible blanket. He wore light shoes, or none at all. The little flat mail-pockets strapped under the rider's thighs would each hold about the bulk of a child's primer. They held many and many an important business chapter and newspaper letter, but these were written on paper as airy and thin as gold-leaf, nearly, and thus bulk and weight were economized. The stage-coach traveled about a hundred to a hundred and twenty-five miles a day (twenty-four hours), the pony-rider about two hundred and fifty. There were about eighty pony-riders in the saddle all the time, night and day, stretching in a long, scattering procession from Missouri to California, forty flying eastward, and forty toward the west, and among them making four hundred gallant horses earn a stirring livelihood and see a deal of scenery every single day in the year.

Samuel L. Clemens, *Roughing It* (Hartford, Conn., 1872)

The newspaper writer in the next extract, while travelling on the coach carrying the first overland mail from St Louis to San Francisco in 1858, stopped at some of the 'forerunners of modern motels'. What facilities were provided here? How important do you think they were in assisting travel? What problems, other than those faced by the Pony Express riders, did coach-drivers and their passengers experience? What did the writer find when he reached the west coast?

The Pacific Railroad train, carrying the first overland mail, arrived at Tipton, the western terminus of the road, situated in Moniteau County, Mo., at precisely one minute after six o'clock P.M. of Thursday the 16th inst., being several minutes behind time. We there found the first coach ready, the six horses all harnessed and hitched, and Mr. John Butterfield, Jr., impatient to be off.

The town contains but a few hundred inhabitants, and all these seemed to have turned out for the occasion, though they made no demonstration on account of it. The place is, however, but a few months old, having been built since the completion of this end of the line, and doubtless excitements are too rare to be appreciated. They looked on with astonishment as the baggage and packages were being rapidly transferred from the cars to the coach. The latter was entirely new and had not yet held a load of passengers. . . . In large letters over the side was the following: OVERLAND MAIL COMPANY.

The time occupied in shifting the baggage and passengers was just nine minutes, at which time the cry of 'all aboard', and the merry crack of young John Butterfield's whip, denoted that we were off. . . .

Our road for the first few miles was very fair, coursing through several small prairies, where for the first time I noticed those travelling hotels so commonly seen in the western country. These are large covered wagons, in which the owner and his family, sometimes numbering as high as a dozen, emigrate from place to place, travelling in the daytime, and camping near wood, water, and grass at night. All along the wildest western road these hotels may be met in every direction, enlivening the way by their camp fires at night, and presenting pictures of domestic felicity which might well be emulated in certain quarters more comfortable and less homely. . . .

The first stopping place was at 'Shackleford's', about seven miles distant, and we seemed hardly to have become comfortably seated in the coach before our attention was attracted to the illumination of our destination — a recognition of the occasion which seemed quite cheering after the apparent previous neglect. The team wheeled up in fine style, and we found the change of horses ready harnessed and supper waiting. Mr. Shackleford assured us that he would have fired a gun for us, but he could not get it to go off. We took the will for the deed, however, and hustled in to supper, which was soon despatched. After taking leave of Mr. Corbin and the others, we were off again to the next station, having been detained, in all, twenty minutes. . . .

Some little delay was experienced, here, before the wild mules could be caught and harnessed, by which several hours of our advance time was lost. Mr. J. B. Nichols of Mr. Crocker's division was to drive, and Mr. Mather of Mr. Glover's division, which commences at Chadbourne and ends at Franklin on the Rio Grande, was to proceed on horseback, point out the road, and maintain a general supervision. Whether from the inefficiency of Mr. Nichols' driving, or because Mr. Mather's furious riding frightened the mules, or because the mules were wild, or that the boys had been having a jolly good time on the occasion of the arrival of the first stage . . . we here suffered a detention of some hours. The mules reared, pitched, twisted, whirled, wheeled, ran, stood still, and cut up all sorts of capers. . . . the gyrations continued to considerable length, winding up with tangling all the mules pretty well in the harness, the escape of one of the leaders into the woods, and the complete demolition of the top of the wagon; while those in charge of it lay around loose on the grass, and all were pretty well tired out and disgusted. . . . I thought the progress of the mail, for that night at least, was stopped; but Nichols averred that the mail should go on if he went alone with the two wheel-mules; and, sure enough, he started off after getting the harness once more disentangled, and kept the road in fine style. I had fully made up my mind by this time that it would be as much as my life was worth to go under the existing circumstances, but, seeing him go off, I rode up to him, and, finding persuasion of no avail, overcame my strong objections and concluded to go, though if I had had any property I certainly should have made a hasty will. When I had become seated I thought I would ascertain all the chances, and the following dialogue ensued between myself and Mr. Nichols:

'How far is it to the next station?'

'I believe it is thirty miles.'

'Do you know the road?'

'No.'

'How do you expect to get there?'

'There's only one road; we can't miss it.'

'Have you any arms?'

'No, I don't want any; there's no danger.'

Whether there was danger or not, I felt as if I had a little rather have started under other circumstances; but I was bound to go with the mail, though I had not much confidence that our two mules could make the thirty miles. Fortunately our course was a clear and straight one, leading across an apparently boundless prairie, with not a tree or shrub to be seen, the parched grass almost glistening in the light of the moon.

The night was clear and bright, the road pretty level, and the mules willing, and I soon ceased to regret having started. I alternately drove while Nichols slept, or slept while he drove, or rode horseback for the man who accompanied us to take back the team, and, altogether, passed a very pleasant night, though our progress was necessarily slow. But about 2 A.M. we came to a steep and stony hill, obstinately jutting from the prairie, right in our path and impossible of avoidance. One mule could neither be coaxed or driven up, so we had to camp until morning, when, after much difficulty, we ascended the hill and discovered the station fire, miles distant — a mere speck among the trees. We soon reached it and found it to be a corral, or yard, for the mules, and tents erected inside for the men, under charge of Mr. Henry Roylan. They had seen us coming and were herding the mules as we drove up. Their corral was built of upright rough timber, planted in the ground. They had pitched their tents inside, for fear of the Indians, and took turns standing guard, two hours on and two hours off. . . .

From San Jose the road leads, through San Mateo and San Francisco counties, to the city, having prosperous ranches ranged all along the line, with the flourishing little villages of Redwood and Santa Clara en route. I was very sorry to be obliged to pass through this interesting part of the journey in the night — and a dark night at that; but the overland mail was on board and we made no stoppages other than to change horses at stations about ten miles apart. It was just after sunrise that the city of San Francisco hove in sight over the hills, and never did the night traveller approach a distant light, or the lonely mariner descry a sail, with more joy than did I the city of San Francisco on the morning of Sunday, October 10. As we neared the city we met milkmen and pleasure seekers taking their morning rides, looking on with wonderment as we rattled along at a tearing pace.

Soon we struck the pavements, and, with a whip, crack, and bound, shot through the streets to our destination, to the great consternation of everything in the way and the no little surprise of everybody. Swiftly we whirled up one street and down another, and round the corners, until finally we drew up at the stage office in front of the Plaza, our driver giving a shrill blast of his horn and a flourish of triumph for the arrival of the first overland mail in San Francisco from St. Louis. . . . as the man took the mail bags from the coach, at half-past seven A.M. on Sunday, October 10, it was just twenty-three days, twenty-three hours and a half from the time that John Butterfield, the president of the company, took the bags as the cars moved from St. Louis at 8 A.M. on Thursday, 16th of September, 1858. And I had the satisfaction of knowing that the correspondent of the New York *Herald* had kept his promise and gone through with the first mail — the sole passenger and the only one who had ever made the trip across the plains in less than fifty days.

New York Herald, 26 September to 19 November 1858

A new force of settlement was now beginning to make its presence felt. In the 1820s the steam train had been invented in England, and even by the 1840s some railroads were in operation in the United States. By 1860 most of the eastern areas were covered by a network of railroads (figure 5.26, page 108). The densest inland pattern was in the north around Lake Michigan, centred on Chicago.

How could the railroads get through to the west coast? In the United States they were built by private companies, and there was fierce rivalry between these companies in the 1860s as they each planned to reach the Pacific. The companies wanted their railroads to be profitable, but the costs of building over the difficult terrain were high; they also faced the difficulty of bridging large rivers such as the Mississippi and the Colorado. There were only occasional opportunities for revenue from the unsettled areas that the lines would cross, so they sometimes deviated from a direct route to include existing settlements from which profitable trade could be gathered (freighting cattle, for example).

The American continental railroads were developed on a land-grant system. For every mile of track that a railway company built, it was given exclusive ownership of six miles of country on either side as an encouragement. Some companies were too eager to build their line, and as they had little capital they often nearly went bankrupt. The settlers who followed the trails on foot, horseback or wagon before the advent of the railroads had to cope with many problems—Indian

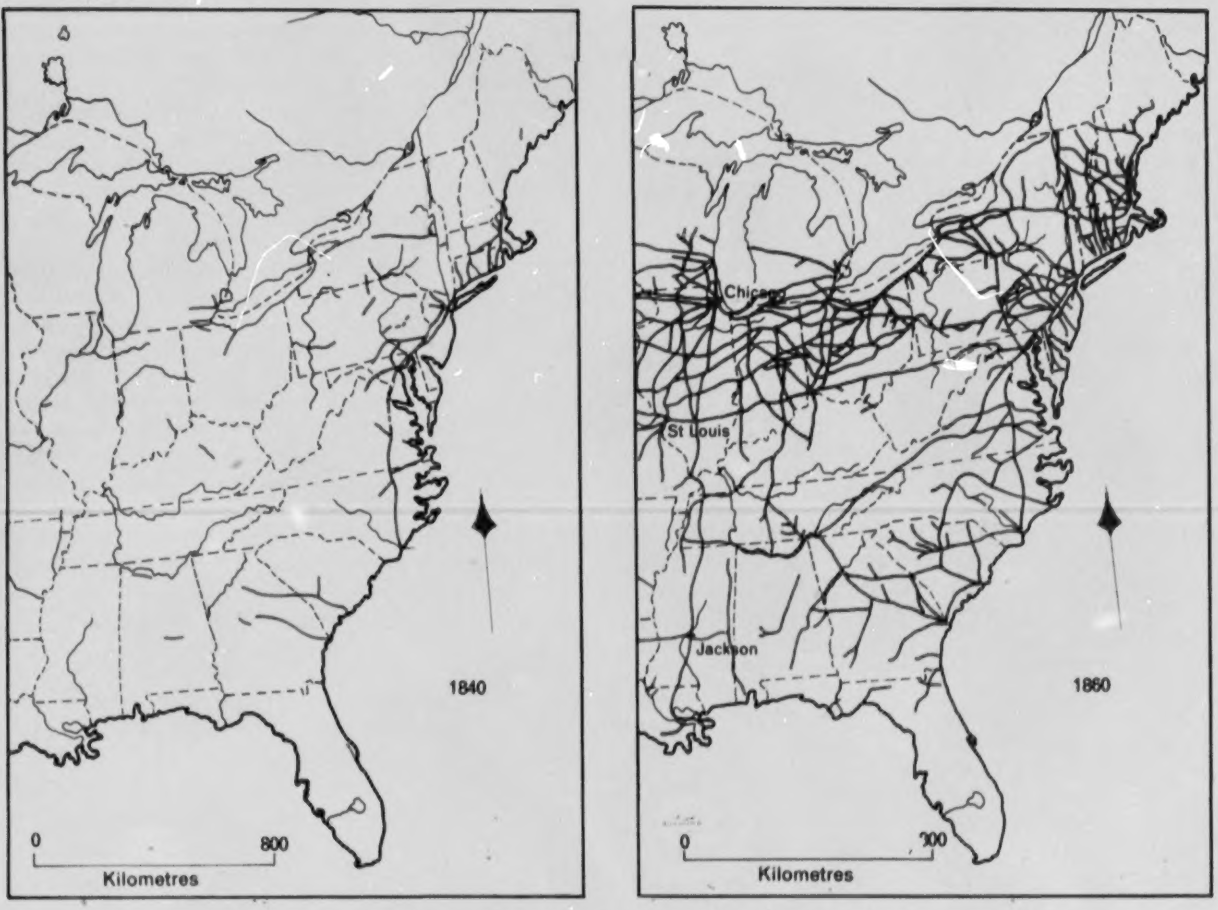


Figure 5.26: Railroads in operation in 1840 and 1860. How do the two patterns differ? In what ways is the development of railways similar to the development of settlement?

opposition, freak weather conditions (floods, avalanches, droughts, tornadoes), lack of food and water. The railway companies faced all these problems, as well as labour strikes, competition from other companies, and sabotage.

Try to imagine yourself as a railroad company director. Where would you build a railway to the west coast? Look at a relief map of the United States, noting the mountains and rivers—how would you get through? You would also have to consider how much finance you would need, and what your rivals would be doing. Is it best to press straight through to the coast to get there first, or should you deviate to get revenue by picking up freight from trading posts on the way? How do you plan to offset the losses that the problems noted in the previous paragraph could cause? To what extent would you plan the path of your railroad to cut off your opponents, or would you ignore what they were doing?

Imagine you are the president of three major railroad companies with railheads at Chicago, St Louis and Jackson. Sketch in on figure 5.27 the routes you would recommend for railway construction to terminals at Seattle, San Francisco and Los Angeles respectively.*

What effect do you think the railroads had on settlement? (Remember the land grants the railroads were given.) Also, why would the railroads be important to the farmers? Look at figure 5.28. What connection can you see between where the railroads went and the location of the farming settlements?

By 1910, most of the land suitable for farming had been taken up (figure 5.29). What reasons

---

* You are also urged to play the Railway Pioneer Game, devised by Rex Walford. The rules of this game can be found in his book *Games in Geography* (London: Longman, 1969), and a full playing kit is available from the same publishers.

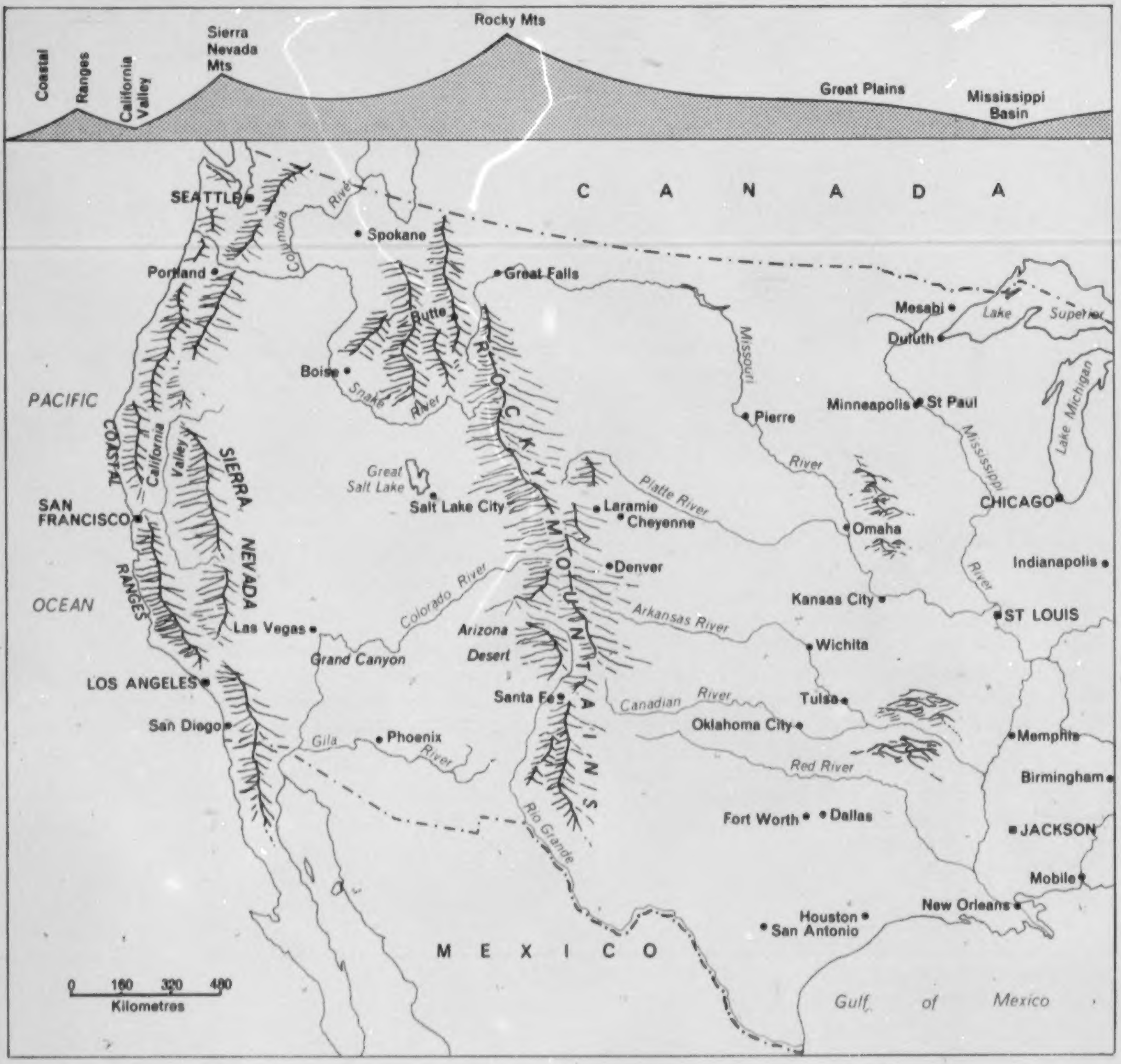

Coastal
Ranges
California Valley
Sierra Nevada Mts
Rocky Mts
Great Plains
Mississippi Basin
C A N A D A
SEATTLE
Columbia River
Spokane
Portland
Great Falls
Butte
Boise
Snake River
ROCKY MOUNTAINS
Missouri River
Mesabi
Lake Superior
Duluth
Lake Michigan
Minneapolis
St Paul
Mississippi River
Pierre
PACIFIC OCEAN
COASTAL RANGES
California Valley
SIERRA NEVADA
Great Salt Lake
Salt Lake City
SAN FRANCISCO
Laramie
Cheyenne
Platte River
Omaha
CHICAGO
Indianapolis
Denver
Colorado River
Kansas City
ST LOUIS
Arkansas River
Las Vegas
Arizona Desert
Grand Canyon
Wichita
LOS ANGELES
Santa Fe
Canadian River
Tulsa
San Diego
Phoenix
Gila River
Oklahoma City
Memphis
Red River
Birmingham
Fort Worth
Dallas
JACKSON
Rio Grande
Mobile
New Orleans
Houston
San Antonio
M E X I C O
Gulf of Mexico
0 160 320 480
Kilometres

Figure 5.27: Map and profile diagram of physical features of the western United States

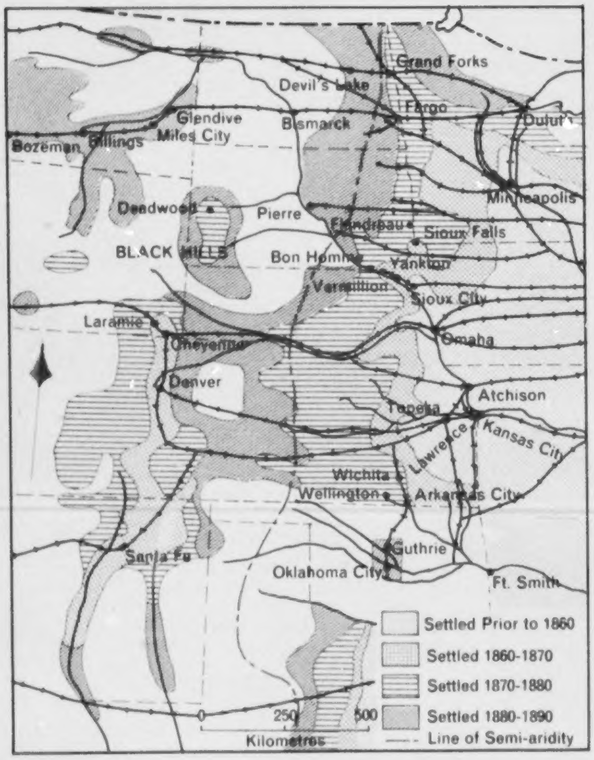

Grand Forks
Devil's Lake
Fargo
Duluth
Glendive
Miles City
Bismarck
Bozeman
Billings
Minneapolis
Deadwood
Pierre
Flandreau
Sioux Falls
BLACK HILLS
Bon Homme
Yankton
Vermillion
Sioux City
Laramie
Cheyenne
Omaha
Denver
Atchison
Topeka
Lawrence
Kansas City
Wichita
Wellington
Arkansas City
Santa Fe
Guthrie
Oklahoma City
Ft. Smith
Settled Prior to 1860
Settled 1860-1870
Settled 1870-1880
Settled 1880-1890
Line of Semi-aridity
0
250
500
Kilometres

Figure 5.28: Settlement changes, 1860–90, and railway lines

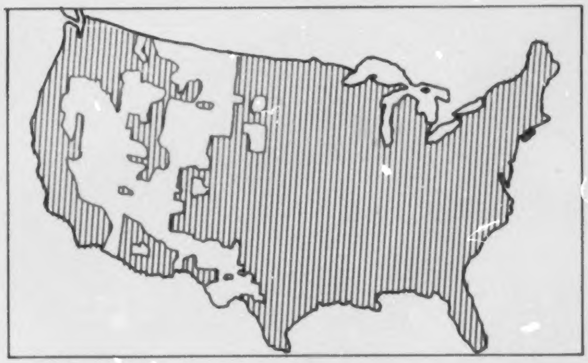


Figure 5.29: Areas of the United States in 1910 with more than one inhabitant per square kilometre

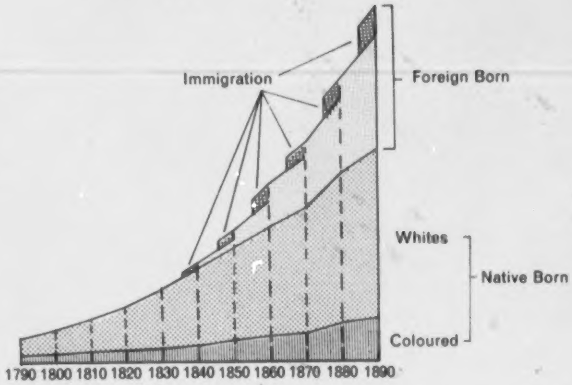


Figure 5.30: Comparative growth of different sections of the United States population, 1790–1890

can you think of to explain why all the land was not occupied?

Draw six blank maps of the United States. Mark in the approximate boundary of settlement for each of these dates—1650, 1700, 1750, 1800, 1850, 1900. During which periods did settlement spread most quickly? Why? What changes in the types of settlement, especially farming, occurred over the three hundred years from 1600 to 1900? It was suggested earlier that the output of settlers to the west was matched by an input in the east. Can you tell whether this was so from figure 5.30?

6

The modern farmer in the United States

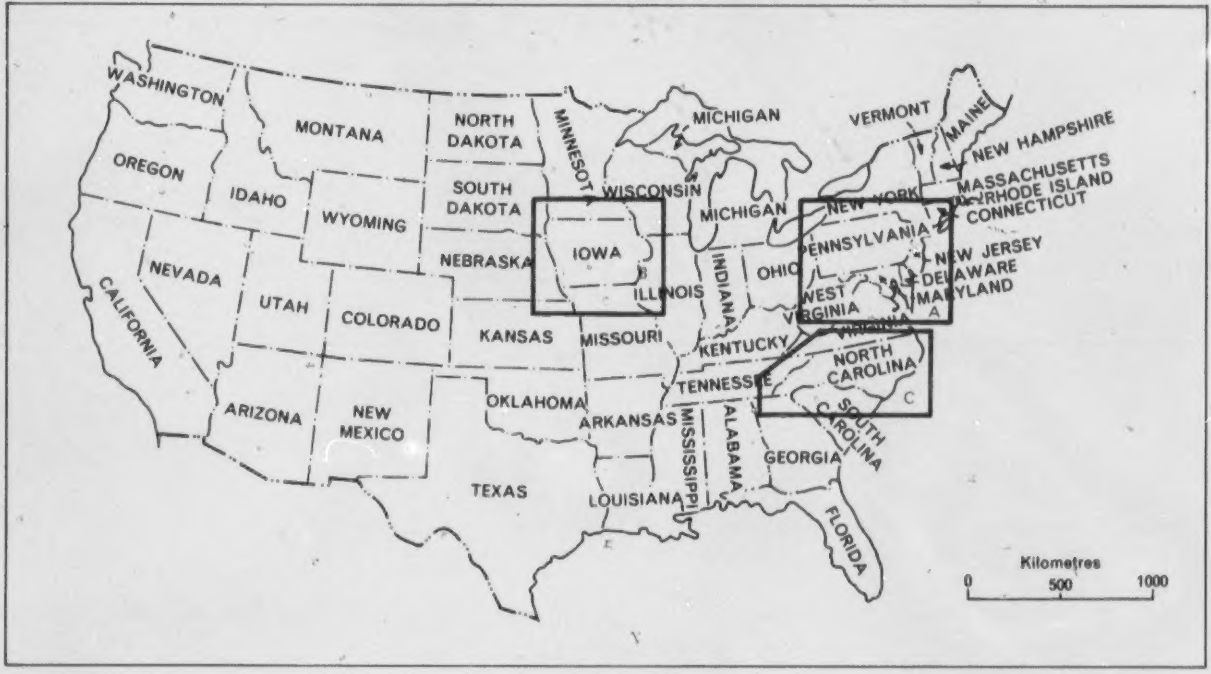
As Study 5 has shown, Europeans moved into the United States, and eventually right across the country. They travelled along a number of routes which followed different sorts of physical features. When a particular person or group of persons found country that suited them, they settled, building houses, clearing the land and farming it in various ways.

The way men are using this same land today may be similar to the early land use. How can the ways men use the land be compared? They could be classified under certain headings; for example, 'rural'/'urban' is a simple classification. The focus in this study will be on changes in rural land use. Keep in mind how men decided to farm as they moved westwards, and compare what they did then with what farmers are doing in the same places now.

The three places where we will look at the modern United States farmer are Pennsylvania (two farmers), North Carolina, and Iowa (see figures 6.1 and 6.2). Compare the locations of these four farms. From your investigation in Study 5 of the historical spread of settlement, try to work out the order of settlement of the three areas.

Figures 6.3–6.6 show the major settlement features of each area—roads and buildings. Each area differs in what is called the *settlement pattern*—the arrangement of the roads, the number and pattern of houses and other buildings. Sometimes the settlement pattern was affected by the rivers, mountains and valleys; in other cases, men de-

Figure 6.1: States of the U.S.A., showing the areas covered by the three location maps (A, B, C) in figure 6.2


WASHINGTON
MONTANA
NORTH DAKOTA
MINNESOTA
MICHIGAN
VERMONT
MAINE
NEW HAMPSHIRE
OREGON
IDAHO
SOUTH DAKOTA
WISCONSIN
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
WYOMING
MICHIGAN
NEW YORK
IOWA
PENNSYLVANIA
NEW JERSEY
DELAWARE
MARYLAND
NEVADA
NEBRASKA
B
ILLINOIS
INDIANA
OHIO
WEST VIRGINIA
VIRGINIA
A
UTAH
COLORADO
KANSAS
MISSOURI
KENTUCKY
CALIFORNIA
NORTH CAROLINA
TENNESSEE
C
ARIZONA
NEW MEXICO
OKLAHOMA
ARKANSAS
MISSISSIPPI
ALABAMA
SOUTH CAROLINA
GEORGIA
TEXAS
LOUISIANA
FLORIDA
Kilometres
0
500
1000

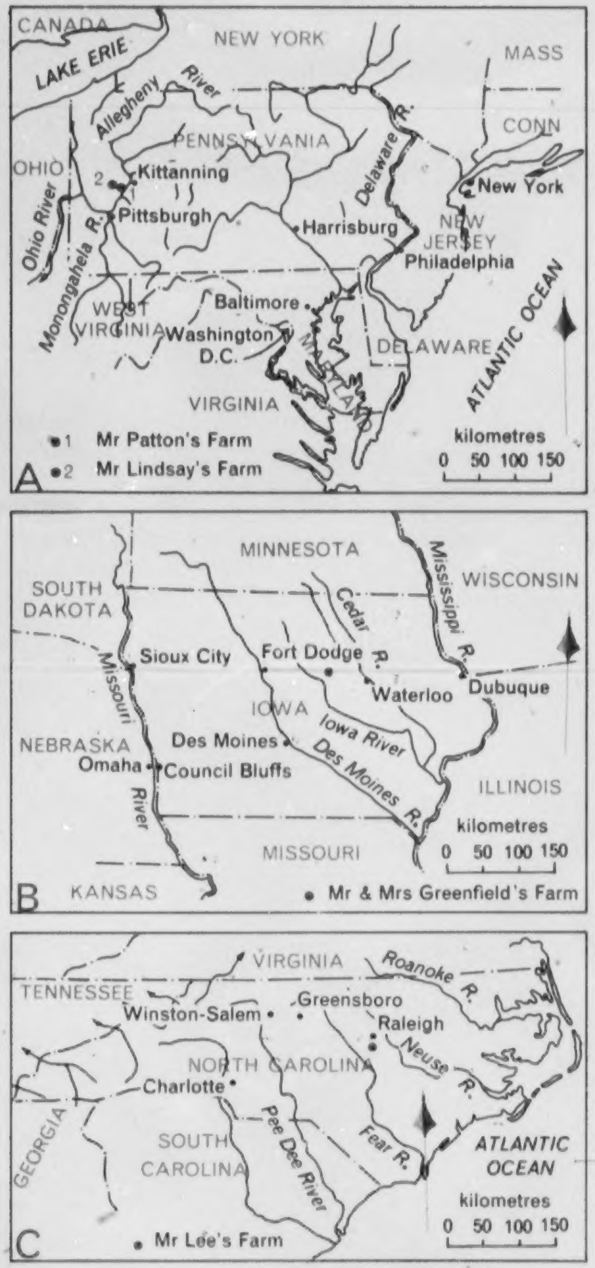

A
CANADA
LAKE ERIE
NEW YORK
MASS
CONN
Allegheny River
PENNSYLVANIA
OHIO
Kittanning
Ohio River
Monongahela R.
Pittsburgh
Harrisburg
Delaware R.
New York
NEW JERSEY
Philadelphia
WEST VIRGINIA
Baltimore
Washington D.C.
MARYLAND
DELAWARE
ATLANTIC OCEAN
VIRGINIA
1 Mr Patton's Farm
2 Mr Lindsay's Farm
kilometres
0 50 100 150
B
MINNESOTA
SOUTH DAKOTA
WISCONSIN
Cedar R.
Mississippi R.
Sioux City
Fort Dodge
Waterloo
Dubuque
Missouri River
IOWA
Iowa River
Des Moines R.
NEBRASKA
Des Moines
Omaha
Council Bluffs
ILLINOIS
MISSOURI
KANSAS
kilometres
0 50 100 150
Mr & Mrs Greenfield's Farm
C
VIRGINIA
Roanoke R.
TENNESSEE
Winston-Salem
Greensboro
Raleigh
Neuse R.
NORTH CAROLINA
Charlotte
GEORGIA
SOUTH CAROLINA
Pee Dee River
Fear R.
ATLANTIC OCEAN
kilometres
0 50 100 150
Mr Lee's Farm

Figure 6.2: A—locations of two farms in Pennsylvania; B—location of farm in Iowa; C—location of farm in North Carolina

cided where they would build roads and houses, regardless of such considerations. Look very carefully at each map, and examine the farm locations on a detailed relief map in an atlas. Consider the regularity (or otherwise) of the road and housing pattern in each area, and compare what you find with the relief shown in the atlas map; also take into account the date of settlement, as revealed in the previous study. As men moved west, how did their ideas of settlement pattern change?

How are men using the land now in these areas? Farms differ in shape, size, types of buildings, types of farm land use, the surrounding vegetation (or lack of it), and topography. Farmers work in different ways—some have work to do every day, some have more work in some seasons than in others, and, of course, the nature of the work itself will vary widely. The methods farmers use are concerned with types of equipment, the special techniques used in production, the amount of money expended and the profit made, the way the final produce is prepared and sold. All these things reflect the purpose of each farm.

The previous paragraph is really a list of points on which you could ask a series of questions about any farm. The four farms in this study are described for you in the following pages; there are maps, photographs, and interviews with the farmers. Ask yourself the above questions about each farm, and write down your answers. If you list the farms in historical order and record your answers in table form, you will have a convenient way of comparing the farms.

Some suggested headings for each of the farms are:

- Name of farm
- Location
- Approximate date of first settlement (refer to the maps and text descriptions in Study 5)
- Nature of local relief and vegetation
- Shape and size of the farm (refer to the influence of relief and drainage)
- Types and positions of farm buildings
- Proportion of land area not cultivated
- Crops grown (with areas)
  - —for consumption
  - —for fodder
  - —for sale
- Livestock kept
- Labour employed
- Machinery used
- Work calendar
- Major source of farm income
- Special farming methods or problems

Are there any other headings you would like to add? After you have examined the material that follows, you may wish to do so.

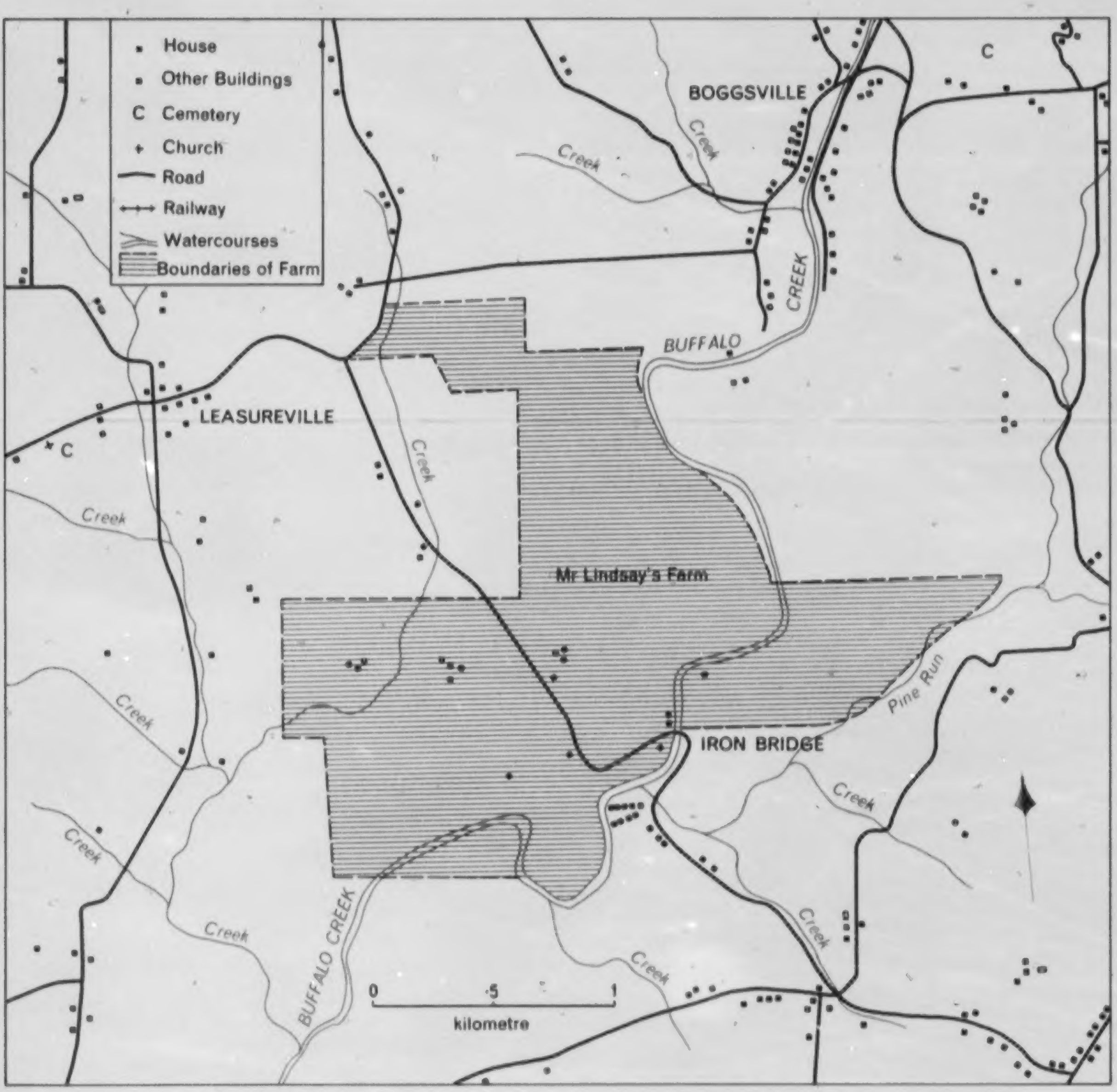

House
Other Buildings
C Cemetery
Church
Road
Railway
Watercourses
Boundaries of Farm
BOGGSVILLE
LEASUREVILLE
IRON BRIDGE
Mr Lindsay's Farm
BUFFALO
CREEK
BUFFALO CREEK
Pine Run
Creek
C
0
·5
1
kilometre

Figure 6.3: Settlement pattern around Mr Lindsay's farm in Pennsylvania

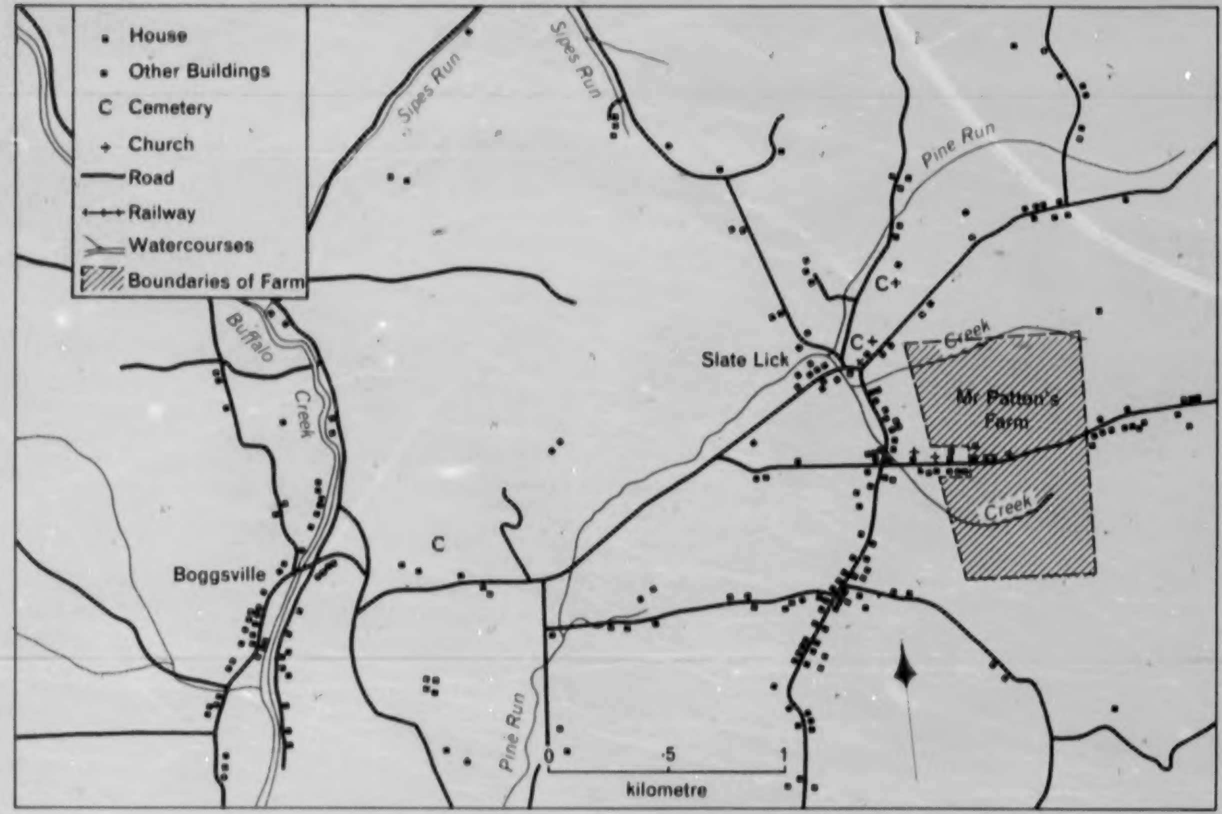
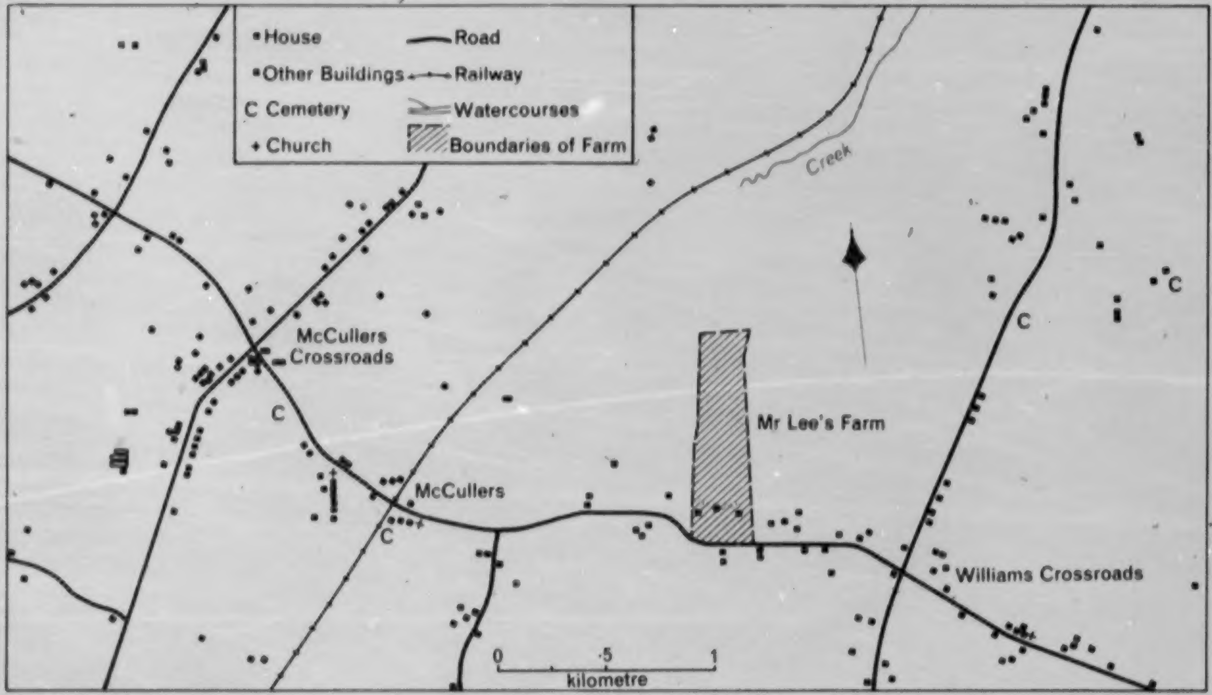

House
Other Buildings
C Cemetery
+ Church
Road
Railway
Watercourses
Boundaries of Farm
Sipes Run
Sipes Run
Pine Run
Buffalo Creek
C+
C+
Slate Lick
Creek
Mr Patton's Farm
Creek
Boggsville
C
Pine Run
0
·5
1
kilometre

Figure 6.4: Settlement pattern around Mr Patton's farm in Pennsylvania

Figure 6.5: Settlement pattern around Mr Lee's farm in North Carolina


House
Road
Other Buildings
Railway
C Cemetery
Watercourses
+ Church
Boundaries of Farm
Creek
McCullers Crossroads
C
McCullers
C
Mr Lee's Farm
C
C
Williams Crossroads
0
·5
1
kilometre

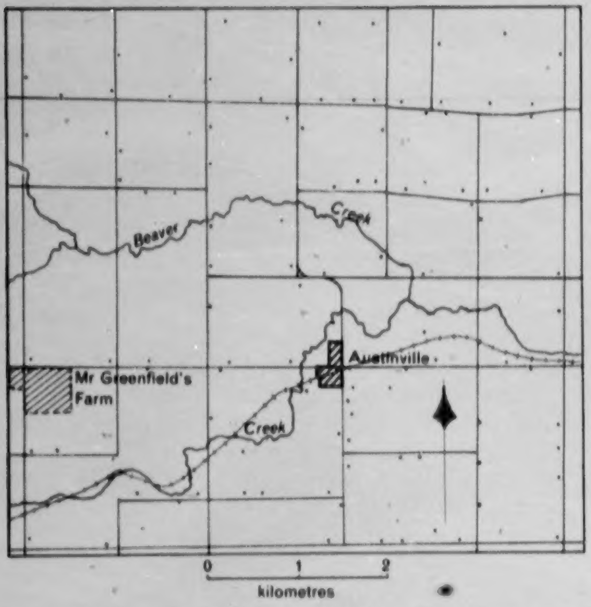

Beaver
Creek
Austinville
Mr Greenfield's Farm
Creek
0
1
2
kilometres

Figure 6.6: Settlement pattern around Mr Greenfield's farm in Iowa—buildings other than houses are not shown

The Lee farm in North Carolina

Mr Lee's farm is about 16 kilometres south of Raleigh, the capital of North Carolina (see figure 6.2).

Q: Mr Lee, would you tell us something about your farm?

A: I've got about 135 acres here; actually, this farm is just across the road from my birthplace. As you can see, the land is highest at the road and runs downhill to the creek in the woods [figure 6.7]; I suppose you could call it a tobacco farm.

Q: In that case, why can't I see much tobacco growing? What do you use the land for?

A: I'll try to answer your second question first. I use from 22 to 27 acres for tobacco (the actual figure is controlled by government regulation), 28 acres for corn, and 20 acres are in pasture. The rest of my land is in woodland. Finally, about 1 acre is used as a home garden.

Q: It seems that the answer to my first question is concerned with this government regulation.

A: Well, yes! The government is concerned that we don't produce too much tobacco, and so a limit is placed on the tobacco poundage per acre. If the poundage exceeds certain amounts, then the acreage must be cut next year. My acreage then tends to vary between 22 and 27 acres. But there's another reason for not having more tobacco acreage. In order

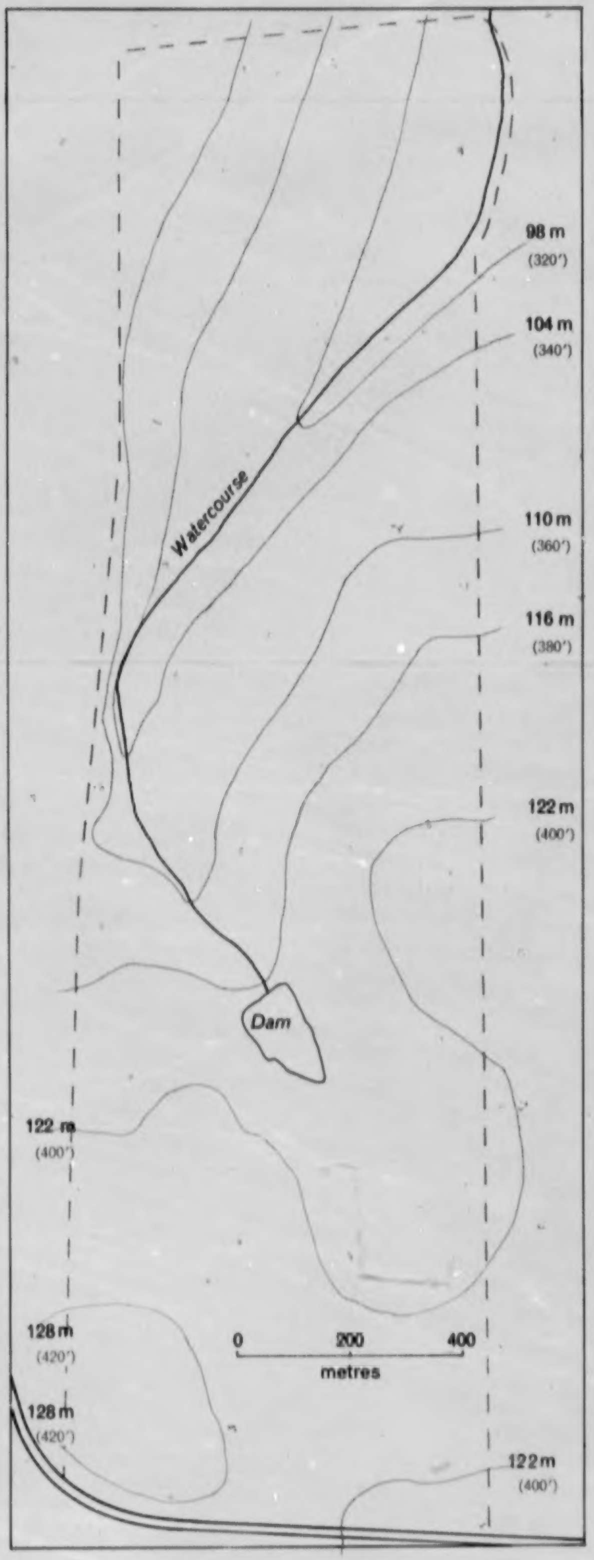

98 m
(320')
104 m
(340')
110 m
(360')
116 m
(380')
122 m
(400')
Watercourse
Dam
122 m
(400')
128 m
(420')
128 m
(420')
0
200
400
metres
122m
(400')

Figure 6.7: Contour map of Mr Lee's farm

to maintain soil fertility, we practise crop rotation—every year we alternate the land between tobacco–corn–grain (mainly oats). On our pasture land we maintain native pasture [figure 6.8]. And so although the government restricts tobacco acreage, I would probably restrict it myself, anyway.

Q: If less than 20 per cent of your land is used for tobacco, why do you call this farm a tobacco farm?

A: Mainly, I suppose, because most of my income is from tobacco. My corn production on 20-odd acres is hardly a large amount, although the support-price system maintains the price. On the other hand, I produce 2200 pounds weight per acre of tobacco, which sells, after being cured, for 69 cents a pound on the average. The actual price ranges from 60 to 81 cents per pound, depending on the grade of tobacco. This sounds a good price, but it costs me 58 cents to produce a pound of tobacco, and so my average profit is only about 11 cents a pound. In addition, when the prices are right, I occasionally fatten cows.

Q: Would you describe how it costs you 58 cents a pound to produce tobacco.

A: The production of tobacco is a complex business and requires a great deal of attention. The tobacco plant bed is prepared in the late fall and treated through December. Planting begins in late January to mid-February in the plant bed, and the seedlings are transplanted in late April to May. We harvest from mid-July through August; after the tobacco leaf is picked, it is cured for five days, stored on the farm, and finally sent to the warehouse for marketing.

Q: This must keep you pretty busy.

A: Yes! For example, planting, etc., means ploughing as well as planting, and, as we plough on the contour [figures 6.9 and 6.10], this takes a little longer, although time is hardly a consideration when you're talking about conserving the soil.

Q: What do you mean, 'plough on the contour'?

A: Basically it means that instead of ploughing up and down hills, we plough around hills, at about the same level. So when the rain falls, the water will not run down the ploughed furrow, taking soil with it, but will be caught by the furrow and forced to soak into the soil. This both holds the soil on slopes and helps keep water in the soil.

Q: You said previously you practise crop rotation because it maintains soil fertility. Is this the only reason for doing this?

A: Well, as I said, basically I'm a tobacco farmer. However, although I maintain soil fertility by rotation, the production of other crops enables me to have other sources of income. When prices are right I occasionally fatten cows, which I graze on the native pasture and feed with corn, oats and soybeans. At other times I sell corn or store it within the support-price scheme, a government scheme to maintain a reasonable price for corn.

Q: Your varied activities must mean that you have a large amount of equipment.

A: Yes. Tobacco farming is complicated and requires much equipment. The curing of tobacco is done in special curing barns [figure 6.11]. I have eight such barns, which are scattered about to reduce the fire danger. Just recently one of these barns was burnt [figure 6.12]. There are also three storage barns, two feed barns and six machinery sheds [figure 6.13]. These machinery sheds house five tractors, a hay baler and stacker, mowing machinery, rakes and discs, and a truck. I don't use all this machinery myself. I occasionally contract some of the work, as well as hiring labour.

Q: Well, thank you, Mr Lee; you've given us a great deal of detail on your farm. It certainly looks a pleasant, well-run concern.

Mr Lee has a variety of land use types on his farm, but he did not tell us whereabouts on the farm he has different types of land use. Look at the aerial photograph in figure 6.15, and make a tracing of it, showing the cropped area, the pasture area and the buildings. Compare your map with the contour map in figure 6.7. Do you find the different land use areas on particular parts of the farm? Do you think the buildings are located in the best places? Why?

Figure 6.8: Mr Lee's pasture. In the interview he described it as 'native pasture'. Look carefully at the photograph—why would he have called it this?

Figure 6.9: One of Mr Lee's ploughed fields

Figure 6.10: A field with tobacco seedlings—what is similar about the method of ploughing in figures 6.9 and 6.10? Why does Mr Lee use this method?

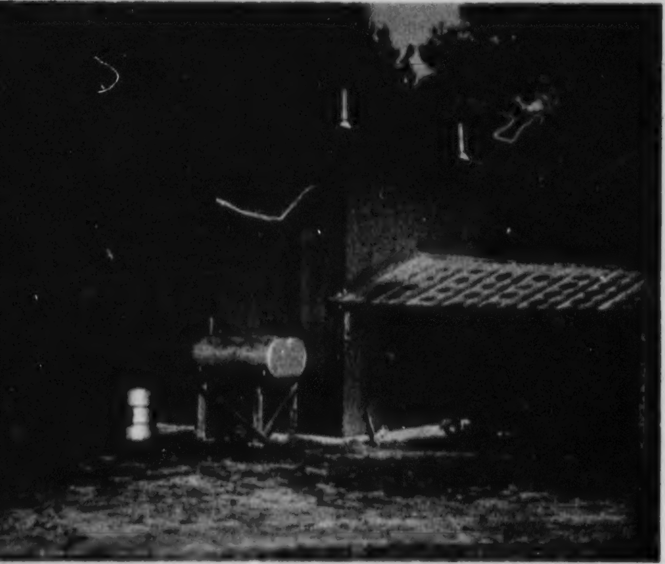


Figure 6.11: One of the curing barns. What activities take place here?

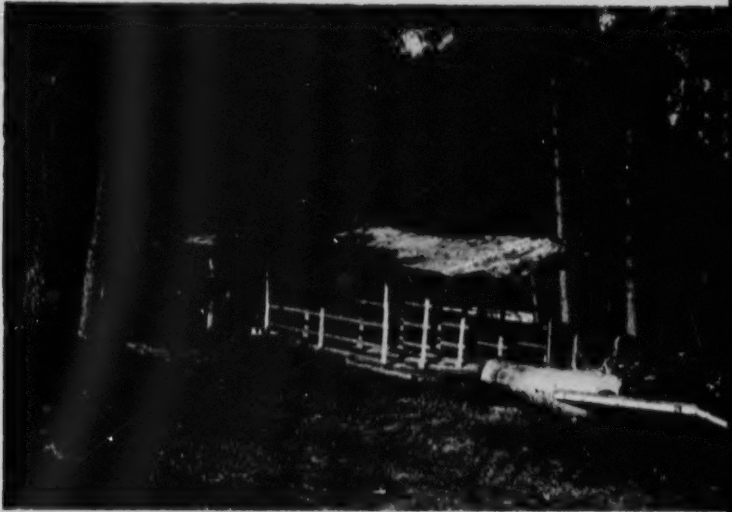


Figure 6.12: Would you call this a permanent or a temporary shed for the storage of tobacco? Why?

Figure 6.13: Some of Mr Lee's machinery sheds—what pieces of equipment can you see?

Figure 6.14: The Lee farmhouse

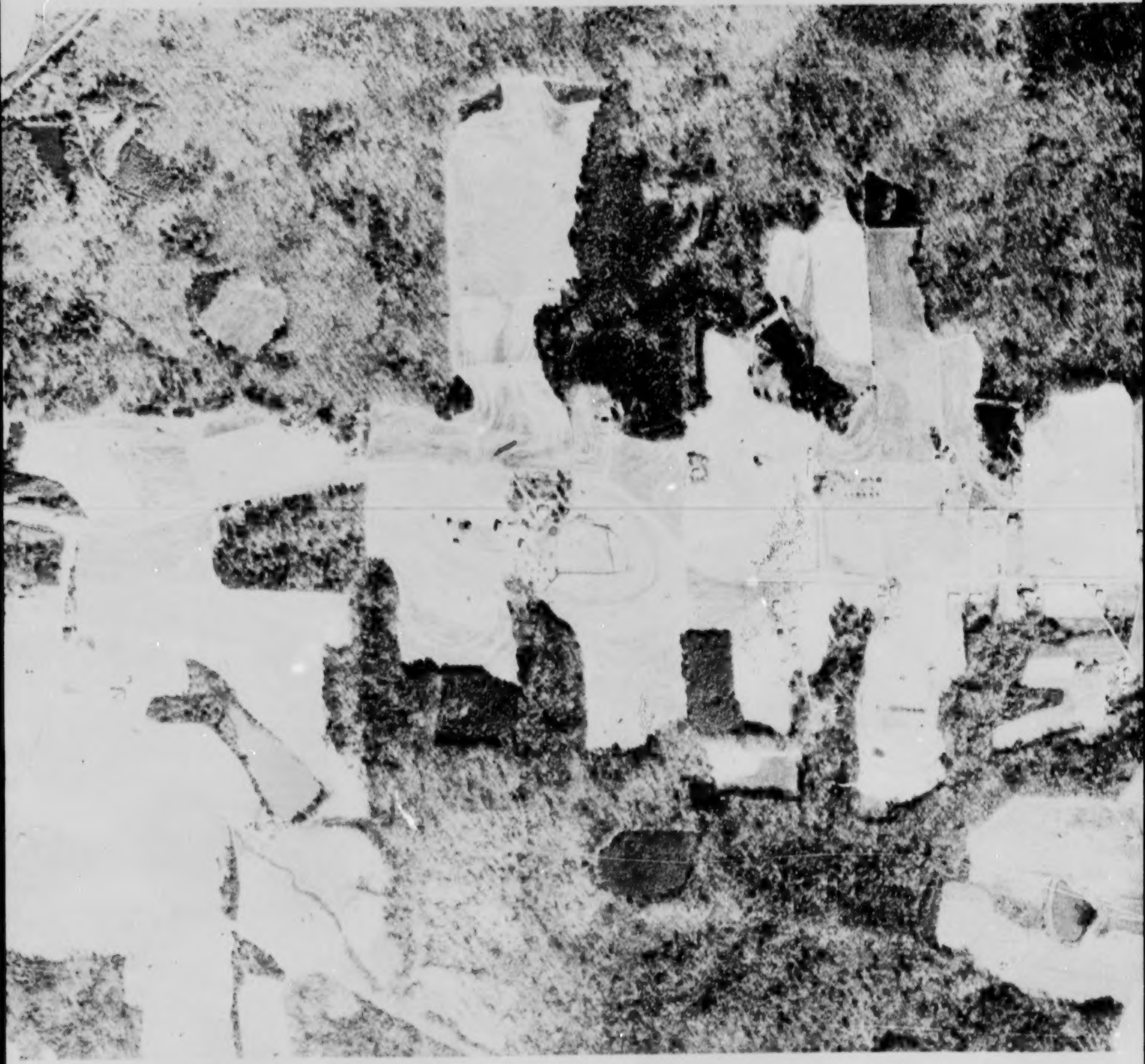
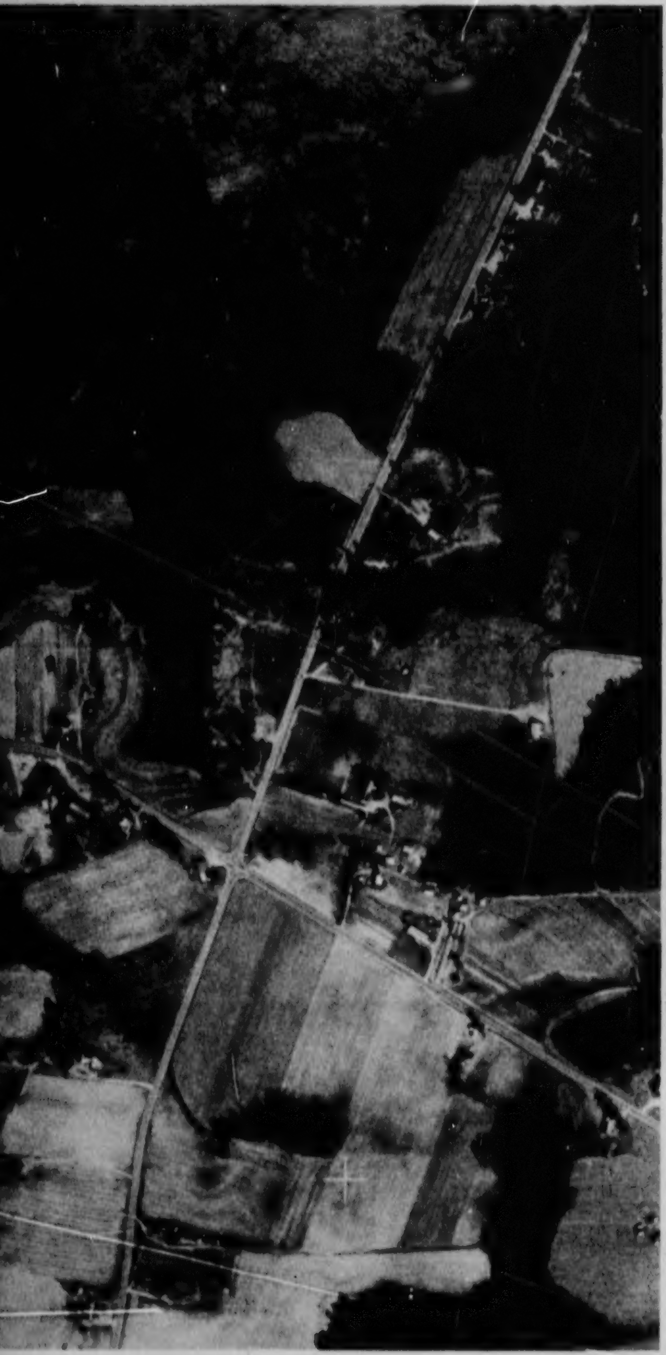


Figure 6.15: Vertical aerial view showing Mr Lee's farm in the centre of the photograph (refer to figure 6.5 if you need help in locating the farm)



The Patton farm in Pennsylvania

Mr William Patton is a farmer in the small village of Slate Lick, near Kittanning in Pennsylvania (see figure 6.2).

Q: Would you tell us something about your farm, Mr Patton?

A: Well, I've got about 150 acres here, stretching up the hills on both sides of the road. Here, you can see it on the map [figure 6.16]. Just recently I had to sell 14 acres of my farm to the government for building a freeway. They paid me $5600 for it [see figure 6.23].

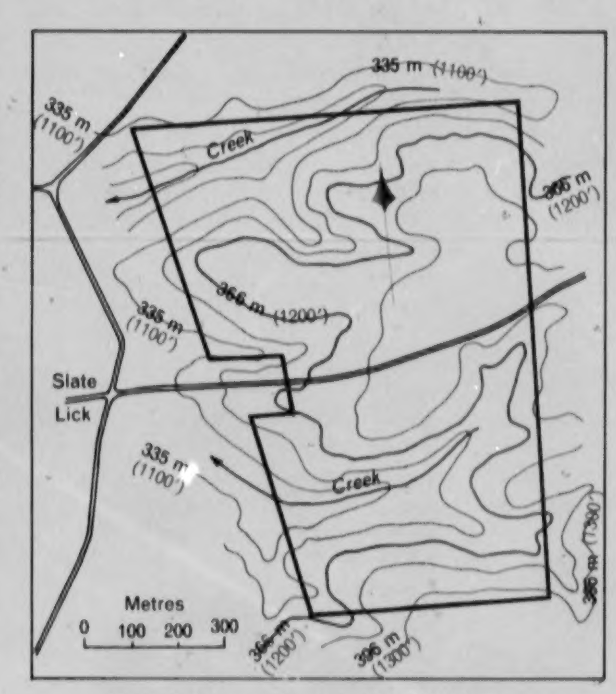

335 m (1100')
335 m (1100')
Creek
366 m (1200')
335 m (1100')
366 m (1200')
Slate
Lick
335 m (1100')
Creek
396 m (1300')
Metres
0 100 200 300
366 m (1200')
396 m (1300')

Figure 6.16: Contour map of Mr Patton's farm

Q: How do you use the farm, Mr Patton?

A: Mainly we grow crops: corn, oats, wheat, barley and some hay. This covers about 71 acres. Another 30 acres of the farm is under permanent pasture, with a further 15 acres used for corn silage, a fodder crop. However, the crops we produce are generally all fed to the animals on the farm. I've got 40 milk cows, 20 calves and heifers, and 800 chickens.

Q: Does that mean that your money comes from milk and eggs?

A: Yeah! We produce about 1200 pounds of milk every day, and we sell this at approximately $5.90 a hundredweight to a dairy in Pittsburgh. It costs us 40 cents per hundredweight to transport it there, where they grade it into three classes: 1. for human consumption as milk; 2. for human consumption as ice-cream or dairy products; 3. for non-human consumption. Unfortunately, the price for milk varies during the year. For example, for Class 1 milk in May I can sell only about 52 per cent of milk at $6.75 per hundredweight; the rest sells for lower. In February I can get $6.75 per hundredweight for almost 73 per cent of my milk. With regard to selling eggs, we average $70 per week. We sell them to retail stores in the local town. Generally, I'm pretty optimistic about the economic situation, as it's improved over the last four years. I generally take about $30 000 per year, and after paying farming bills I've got about $10 000 left.

Q: We still haven't heard about the buildings and equipment on your farm.

A: Well, of course, there's the farmhouse next to the road [figure 6.18]. Up the hill there are a number of buildings used for farm purposes—the dairy barn, machine sheds, milkhouse, chicken house [figure 6.19]. These buildings were quite costly to build, as was the purchase of the equipment. We have two gasoline-engine tractors, one with more horsepower than the other, and each tractor has a plough, because when the time comes to plant the oats, barley and corn we can have two people preparing the ground to keep the work going. The other field machinery pieces are a grain drill, cultivators, a hay mower and conditioner, hay baler, combine harvester, corn picker, forage harvester (for cutting corn for silage), manure spreader, hay wagons, grain wagons, and a forage top wagon. We also grind our own feed. Our barn equipment consists of a silo unloader, pipeline milker, barn cleaner and a bulk tank for the milk. We don't have a crop sprayer. We pay a contractor, our feed man, to spray for us, or use his truck to do it.

Q. Well, that's been most informative. What about the work you do on the farm—for example, on the crops?

A: Most of the work on crops is done in summer—we plant corn in May, which is picked in October and stored in the corncrib [figure 6.21]. In late June or early July the hay is cut, and a little later so is the grain which we planted in the fall (April/May). Later in September the silage is cut. The soil is easily worked. We maintain its ability to produce crops and pasture by using a lot of fertiliser (nitrogen, phosphate, potash). Soil quality can also be spoilt by erosion, by being washed away; we practise contour farming in order to prevent this.

Q: Would I be right to guess from your comment about most work being done in summer that it's cold in winter?

A: Yeah!

Q: How does this affect your work on the farm?

A: Well, the winter is very cold; snow often covers the ground, and temperatures are often well below 20°F. This affects not only our crops but also the animals; from November to April we house the cows in the barns and feed them hay, silage and grain. On the other hand, the chickens are always inside, and the activities here don't change much [figure 6.22].

Q: It sounds as though you're quite happy with your farm.

A: Yeah! It's hard to get help, so I couldn't have the farm any bigger; I have all the equipment I need, I'm paying my way and making quite a satisfactory living. Yeah, I'm happy.

This farm has some interesting features. You will recall from the interview that Mr Patton has about 150 acres, but in talking about his land use he did not cover his whole farm area. Look at figure 6.23. You can see the cropped areas quite plainly. What land use other than crop or pasture can you see taking up part of the farm?

Trace a map of the farm, showing cropland, pasture, the house and buildings, and other land uses. Compare your tracing with figure 6.16. Try to suggest reasons why Mr Patton uses the land in this way. What about the house and the buildings—are they located in the best places? Why?

Figure 6.17: Mr Patton, outside one of his farm sheds

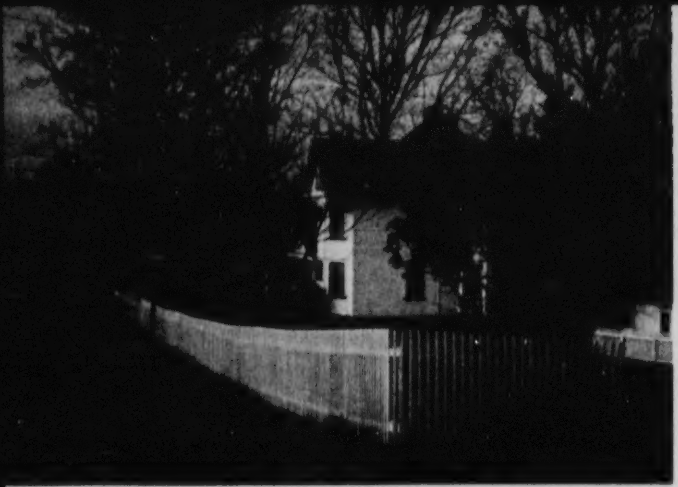


Figure 6.18: The Patton farmhouse—at what time of year was the photograph taken?

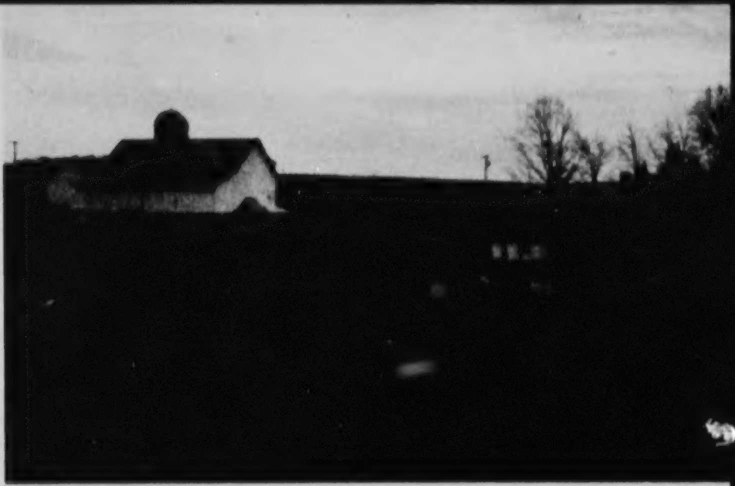


Figure 6.19: Buildings on the farm—left to right: milkhouse, dairy barn, corncrib, chicken house, sheds, farmhouse. Which buildings cover the largest area?

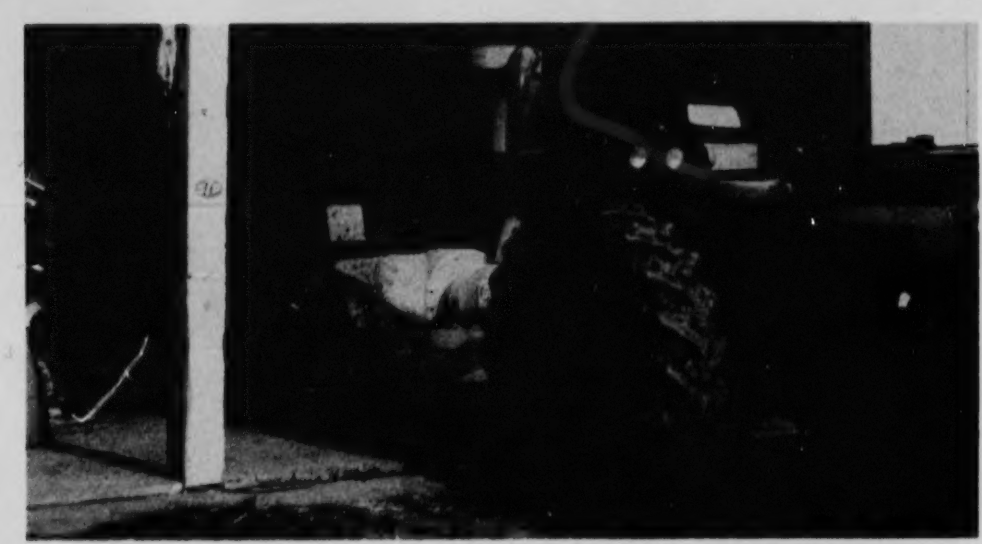


Figure 6.20: One of Mr Patton's pieces of machinery—which one is it?

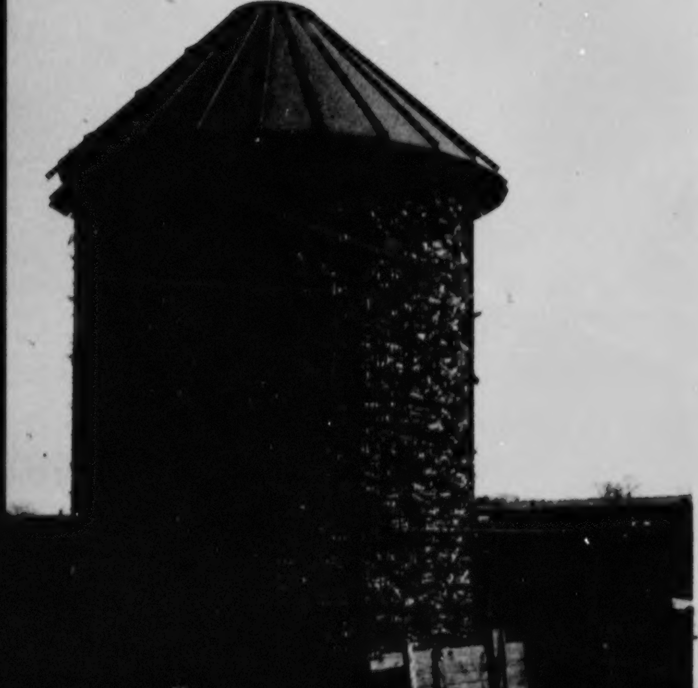
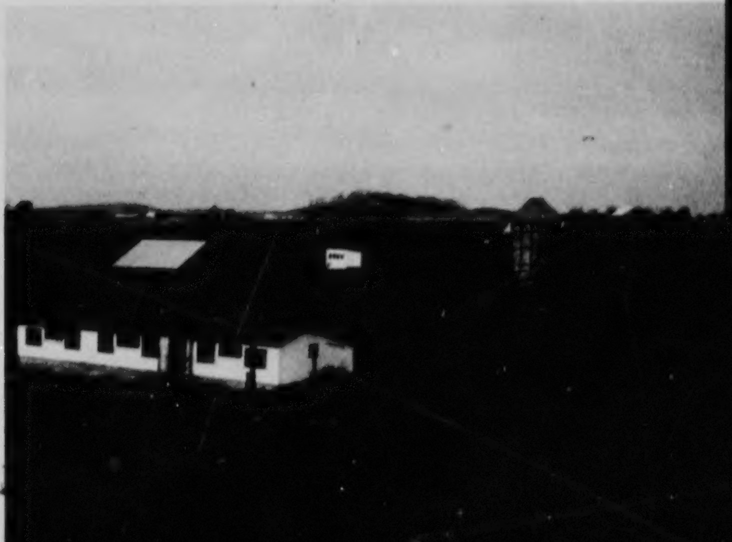


Figure 6.21: Corn is stored in the corncrib

Figure 6.22: Some of the farm buildings—draw a field sketch based on this photograph, and name the buildings by comparison with figure 6.19



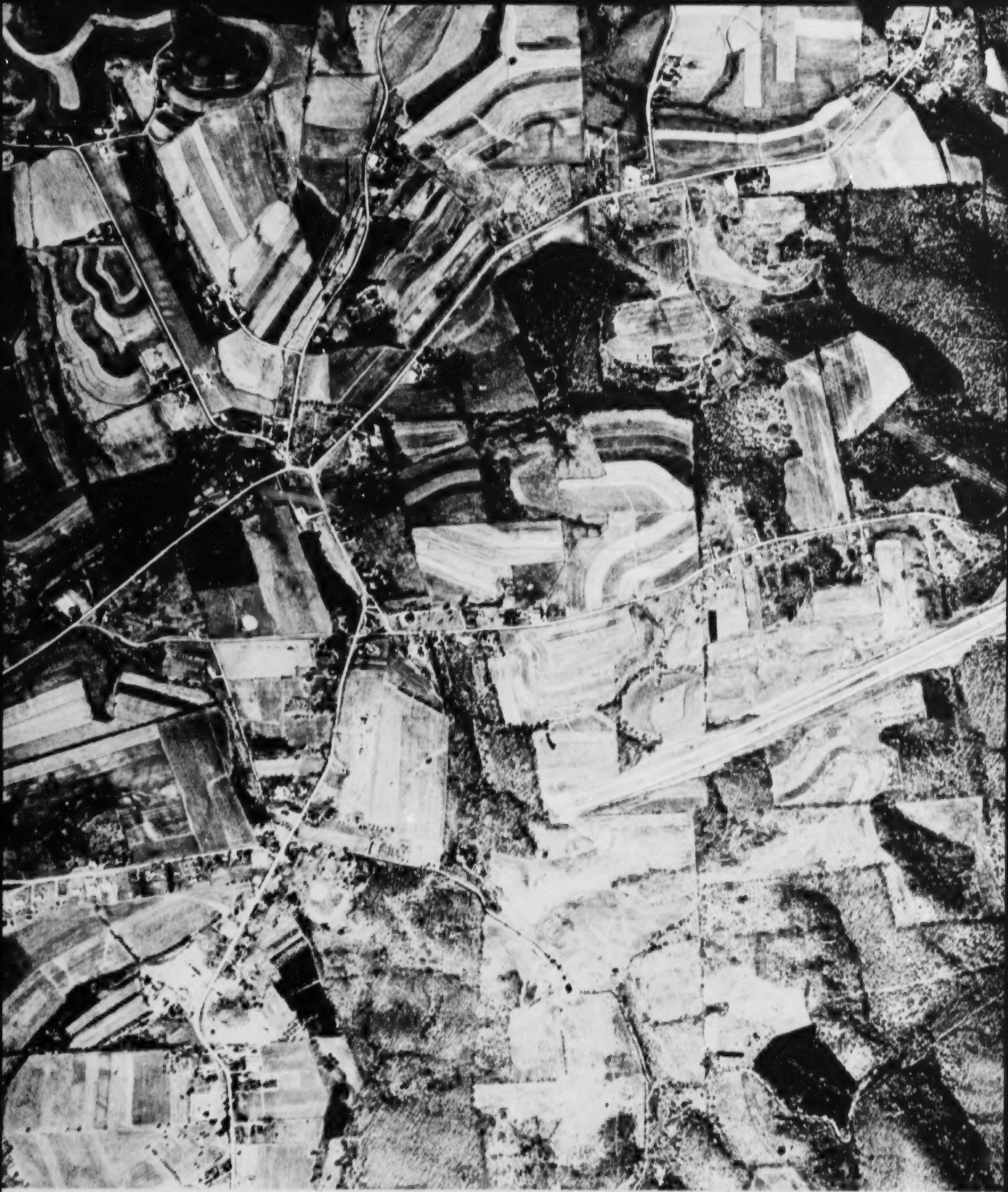


Figure 6.23: Vertical aerial photograph of the Patton farm and surrounding district (refer to figure 6.4 if you need help in locating the farm)

The Lindsay farm in Pennsylvania

Mr Lindsay of Iron Bridge Road, Freeport, has the largest farm in Armstrong County of Pennsylvania —720 acres in area, it is composed of a number of farms that he has purchased over the years. It is run by two people, Mr Lindsay and his son-in-law Bill, who has a degree in animal husbandry and acts as the manager.

Q: Mr Lindsay, just what do you use this land for?

A: Well, firstly, I must put you right. Actually, the land we have here is around about 1000 acres; 400 acres is used for certain purposes, whereas 600 acres of the farm is woodland [figures 6.24 and 6.25]; 86 of the 400 acres is used for permanent pasture, mainly bluegrass and legumes, 61 acres for birdsfoot trefoil and 76 acres for alfalfa, both fodder crops (we get 5 tons of birdsfoot per acre and 7 tons of alfalfa); 60 acres is used for corn and 50 acres for small grains, while the remainder is used for mixed grasses, legume hay and rotation pasture.

Q: Quite a complex operation. It would seem that you regard yourself as a grazier; is that correct?

A: Well, I suppose so. We generally concentrate on animal production. Our top number of cattle is about 250, although we would like to increase this to 500 [figure 6.26]. We have 4 herd bulls and about 100 brood cows within

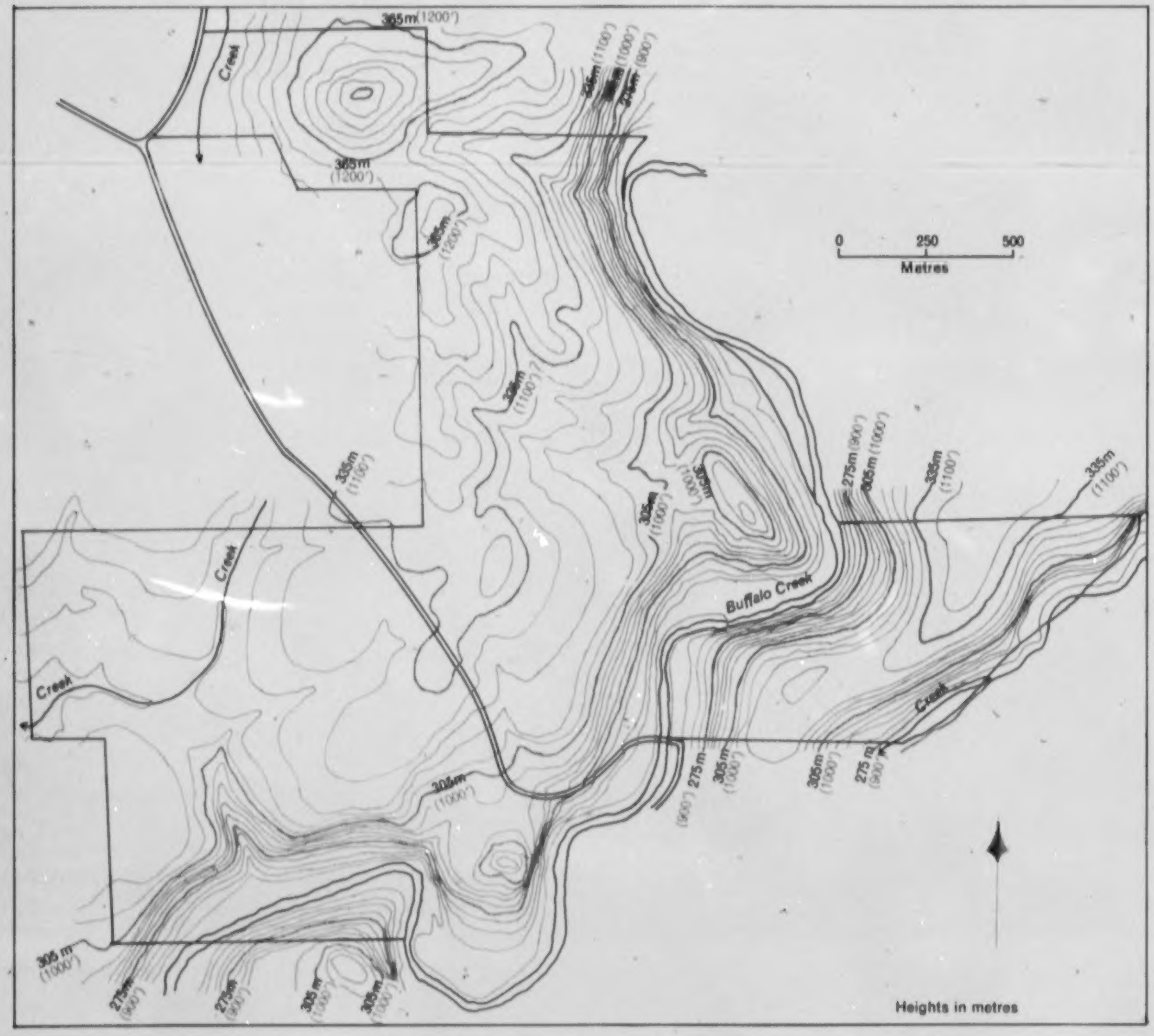

365m (1200')
Creek
365m (1200')
365m (1200')
335m (1100')
305m (1000')
275m (900')
335m (1100')
305m (1000')
305m (1000')
275m (900')
305m (1000')
335m (1100')
335m (1100')
Creek
Buffalo Creek
Creek
Creek
305m (1000')
275m (900')
305m (1000')
305m (1000')
275 m (900')
305m (1000')
305 m (1000')
275m (900')
275m (900')
305 m (1000')
305m (1000')
0
250
500
Metres
Heights in metres

Figure 6.24: Contour map of Mr Lindsay's farm

this figure. Also, we buy 40 steers every year, feed them and then sell them. They cost $100 a year to buy and keep, and we sell them for about $350 to the local butchers and retail trade. Our bulls fetch $1000; apart from service to our own herd, we hire the bulls for mating service and also sell the semen.

Q: Do you have any special equipment for handling the cattle?

A: We don't use any buildings for sheltering cattle during winter. Most of the buildings we have are used for hay storage [figures 6.27 and 6.28], and most of our equipment is used in hay production. We have five tractors [figure 6.29] and normal harvesting equipment; a contractor is hired for bale throwing.

Q: Your large farm must force you to employ extra labour. Is this the case?

A: Yes. We have two full-time workers, and in summer two or three extra. Further, we often hire college kids majoring in agriculture. So we have no problem obtaining extra labour. As you can see, our heaviest time of the year is summer, especially with the harvesting of our fodder crops.

Bill (Mr Lindsay's son-in-law): There's something unusual about this area. Five years ago a local farmer sold a young bull to a Montana farmer after he judged the maximum weight of the bull to be 1800 pounds. This year I saw this bull in Montana and its weight was 2200 pounds. Furthermore, we find that crop growth near the roads is less than that away from the roads. Both these unusual features we attribute to local pollution. This is most obvious during winter, when the snow is on the ground; upwind from the farm is a sinter-plant, and this transforms the snow to red snow in winter.

Q: Mr Lindsay, your farm is large and appears to be economically sound. Certainly, its appearance is immaculate. Do you foresee any problems?

A: Yes, my farm is as you describe. The only problem I really see is the pollution one. If Bill's interpretation is correct, then pollution is reducing production on the farm. Apart from this, I think that the future looks optimistic.

Mr Lindsay's farm is rather large and its land use is unusual. In what way is this so? Look at figure 6.33. Make a tracing of the farm, showing all the types of land use—pasture, cropland, woodland, buildings. Are there any indications why certain land use types are in particular places on the farm? Examine figure 6.24—does this suggest any reasons? Look very carefully at the woodland area in the vertical aerial photograph; you will see different types of trees, indicated by varying degrees of darkness. As this photograph was taken in very early March, what different types of trees are on Mr Lindsay's farm? (See also figures 6.25 and 6.32.)

Figure 6.25: Compare this oblique aerial photograph with the contour map in figure 6.24. What types of land use can you see? Do the different land use types occur on areas of land of different shape? How?

Figure 6.26: Cattle on the Lindsay farm

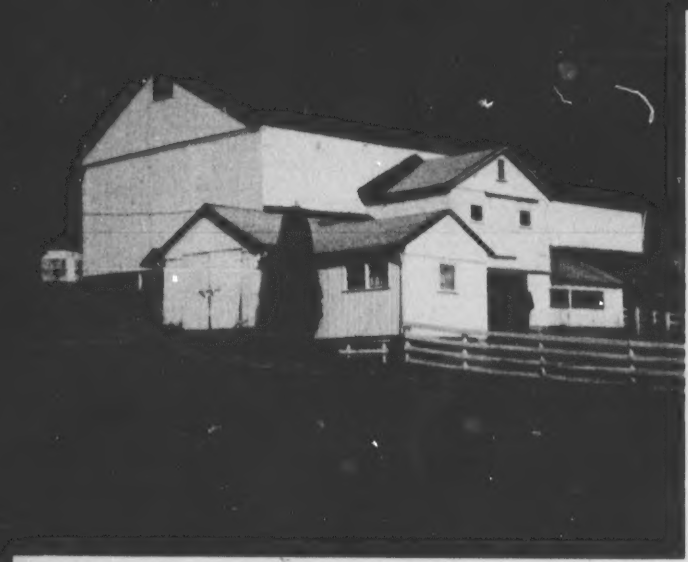


Figure 6.27: The barns on Mr Lindsay's section of the farm. Compare this facility with the building in figure 6.28. What are the differences? Which is older? Is the newer building easier for the farmer to use? How?

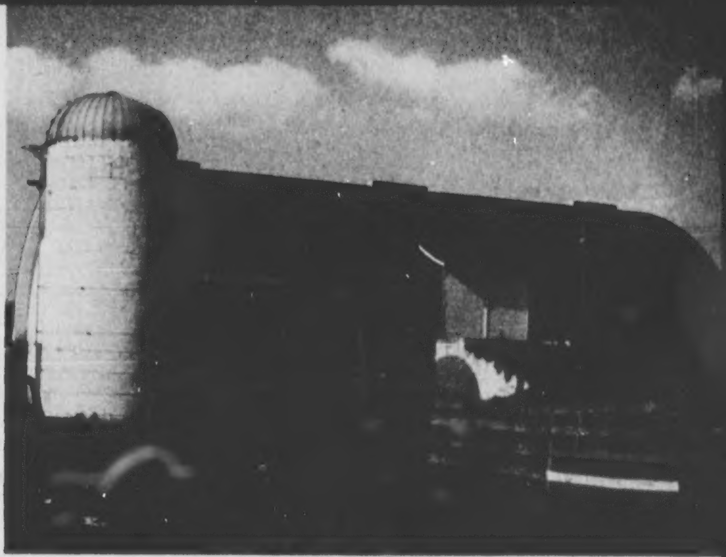


Figure 6.28: The barn on Mr Lindsay's son-in-law's section

Figure 6.29: What types of machinery can you see?

Figure 6.30: The Lindsay farmhouse

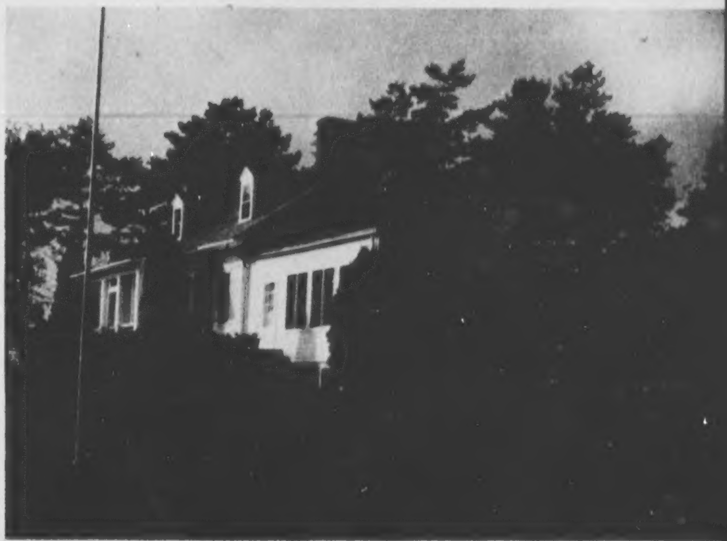


Figure 6.31: The farm pond

Figure 6.32: An aerial view of the farm, looking north

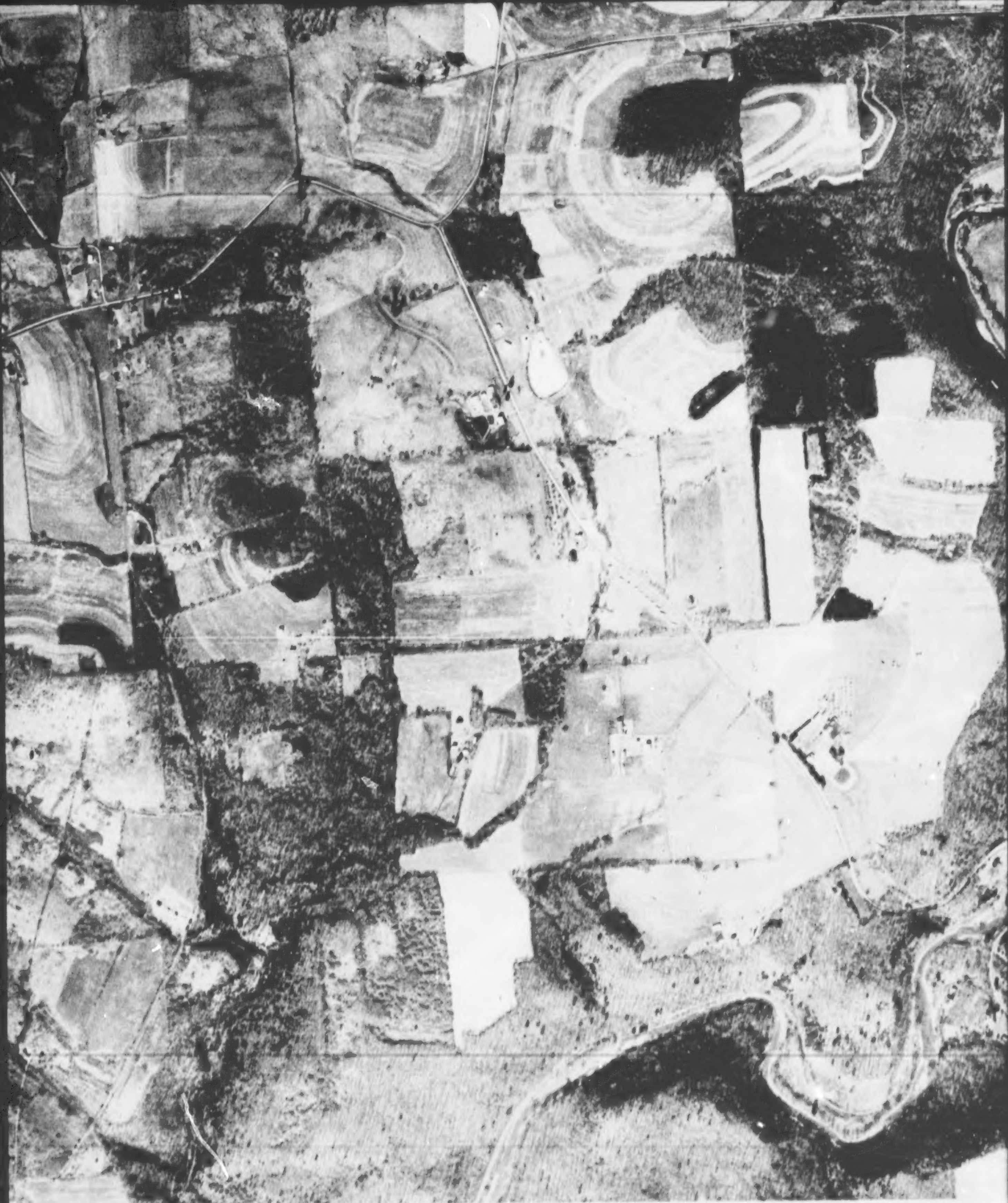


Figure 6.33: Vertical aerial photograph of the Lindsay farm (refer to figure 6.3 if you need help to locate it)

The Greenfield farm in Iowa

Since 1880, Mr Greenfield's grandparents and parents have owned these 215 acres in north-west Iowa (figure 6.34).

Q: Mr Greenfield, how do you use this land?
A: I crop about 150 acres and the rest of the farm is grazed. The crops I grow are corn, which grows on 60 acres, soybeans, 40 acres, and oats, 15 acres. Another 15 acres is used in a government programme of soil conservation; I select the land to be used for this, and normally grow legumes, green manure or something similar. Finally, the last 20 acres is used for fodder crops.
Q: What is the purpose of the government programme?
A: Well, one of the problems of producing crops in the U.S. is that we are producing too much, and thus the prices go down. In order to keep prices up, the government encourages a smaller corn acreage by subsidising the farmer to a certain amount. I get $80 per acre for these 15 acres, which is probably greater than the net profit I could get if the 15 acres were under corn.
Q: You use almost three-quarters of your farm for crops. Does this mean you are basically dependent on crops for your income?
A: One of our crops is sold as a cash crop—the soybeans. Our remaining crops—corn, oats and fodder crops—are used as feed for our animals, which we would regard as our basic activity.
Q: What animals do you have?
A: Well, we have both hogs and beef cows. We run about 15 calves, but our numbers of hogs [figure 6.35] are much greater. We breed about 30 litters in spring and 10 in the fall. There are 8 to 10 hogs in each litter, and of this number 7 or 8 are actually raised. We sell about 300 hogs every year, and so we regard them as much more important than the beef cows.
Q: In your grazing of these animals, are there any special areas on the farm which are used for only one purpose, or are the grazing and cropping areas just moved around annually?
A: There is one area of 40 acres that I use just for grazing, because of the topography. You can see it in the aerial photo [figure 6.36, page 130]. The rest of the farm is farmed in rotation.
Q: Mr Greenfield, would you give us some details about your production and what use is made of it.

A: Well, as I said, we sell the soybeans as a cash crop. This year [1970] we got about $2·65 per bushel, which is a fair to good price. The price normally varies between $2·20 and $3·00. With regard to the animals, the pigs are fed until they reach 200–230 pounds and are then sold. If we only get 15 cents a pound, it's a poor price, as we estimate that it costs 15 to 18 cents to raise one pound of hog meat. However, we have received up to 25 cents a pound, which is a good price. The calves are sold for fattening, which happens when they reach 500–600 pounds; we get 26 to 30 cents per pound. Most of our produce is sold locally; generally it is trucked to the Mississippi and then barged to the market.

Q: As you produce a variety of crops and animals, your farming activities must be pretty hectic.

A: Some parts of the year are! In April we seed the oats and barley, and the corn follows in very early May. Two groups of fifteen sows each farrow [give birth] in May. The third group farrows in October. The other major activity is harvesting—the corn is harvested in October–November, the first crop of hay in June, and the second in mid-July; the oats are also harvested in July, and the soybeans in the first half of October, but these last two crops are harvested by a neighbour. Finally, we fertilise the corn in spring. That covers the particular activities; apart from this, of course, there is the feeding of the animals, arrangements for sale, etc. I contract the shelling of the corn to a contractor.

Q: What sorts of buildings and equipment do you have on the farm?

A: Well, two of our buildings are for the animals—one is the pig shed, the other is the barn where the cattle are sheltered and the hay is stored. Then we have storage areas for the corn, oats and barley. Finally, we have a storage building for the machinery.

Q: What machinery do you have?

A: It's probably best if I just list them. There are two tractors, a disc harrow, a spike-tooth rotary harrow, a plough and cultivator, a mower and side rake for the hay, and finally a corn picker.

Q: This appears to be a rather high capital expenditure.

A: The new cost of the buildings would be about $25–30 000; the tractors are worth $5–6000, while the rest of the equipment cost about $10 000.

Q: You've already indicated that the topography has affected how you use part of the farm. Does the climate affect you in any way?

A: Perhaps if I say that the temperature in summer can reach 100°F and in winter can go as low as 30°F, then you may have some idea of why certain jobs on the farm are done when they are. This point can be emphasised when I say that of our average annual rainfall of 32 inches, some falls as snow. If the crops are late maturing and the winter cold comes early, then things can be bad.

Q: What about soil erosion?

A: Our soils are easily-worked clay loams; because they are light, they can be eroded by wind during the spring. The ploughing of land, breaking up the soil, tends to help this erosion. There has been some soil erosion by water in steeper areas; generally we leave such areas as grassed waterways in order to prevent the erosion.

Q: Thank you, Mr Greenfield, for being so helpful in describing your farm to us.

Mr Greenfield's farm is quite different in many respects from the other farms in this study. Make a tracing of his farm from figure 6.36, and show the farm buildings, the cropped land, the grazing land; label carefully the area which Mr Greenfield said was used for permanent pasture because of the relief. Compare your tracing with the contour map of the farm (figure 6.34). What is unusual about the relief of the permanent pasture, that made him decide to use the land in this way?

Why did Mr Greenfield locate his farm buildings where he did?

Mr Greenfield mentioned soil erosion, by wind. Why would wind erosion be more of a problem here than water erosion?

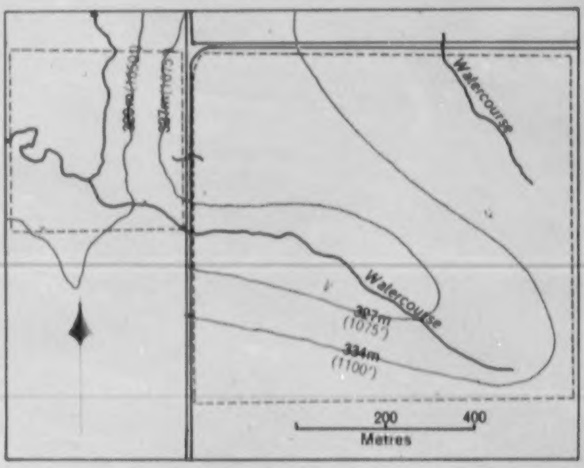


Figure 6.34: Contour map of Mr Greenfield's farm

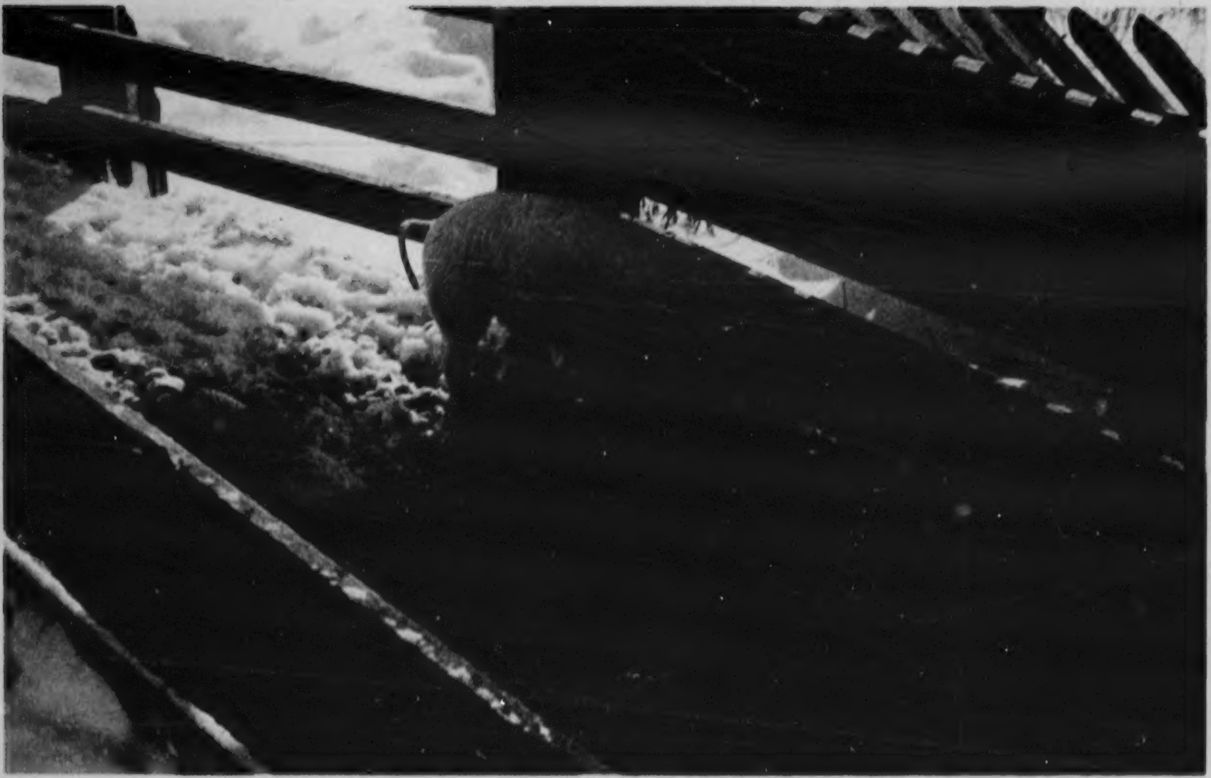


Figure 6.35: Mr Greenfield's hogs—was this photograph taken at a very busy or a rather slack time of year?

In what ways, then, has farming in the United States changed over the centuries of European settlement? Is each of the four modern farms described in this study similar to the early farms in these areas of North Carolina, Pennsylvania and Iowa, or is it significantly different? Try to explain your opinions, drawing on the historical information in Study 5.

What would the pioneer farmers recognise if they revisited these areas? What would they find different?

Has the purpose of farming changed in these areas? If so, will it change further in the future? What other changes do you think might occur? Will the farms continue to be owned and operated by families?

FURTHER ACTIVITY

Is there a geography of pop music?

Fieldwork

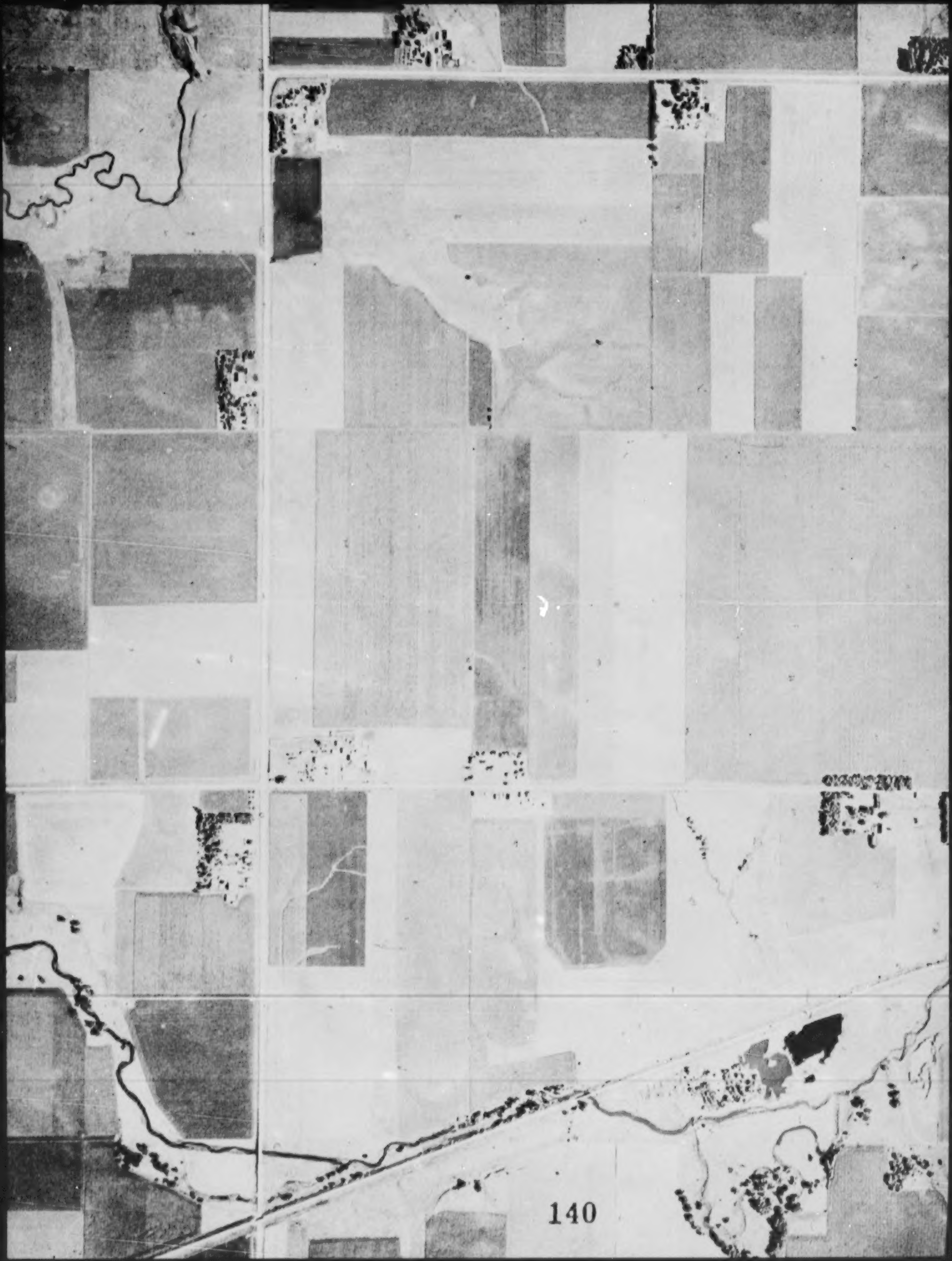
1. Prepare a classification of types of music.
2. Define a local area, preferably an extensive one, in which you can carry out a survey of people's musical preferences, and decide whether or not you will use sampling methods. (How will you decide which households to interview within the local area? Can you make this selection representative of different social groups within the area? Will you interview a range of different age groups in each household, or just one age group? Are there any other factors that should be taken into account?)
3. Interview people, and record on a map
   (a) place of residence
   (b) type of music preferred.

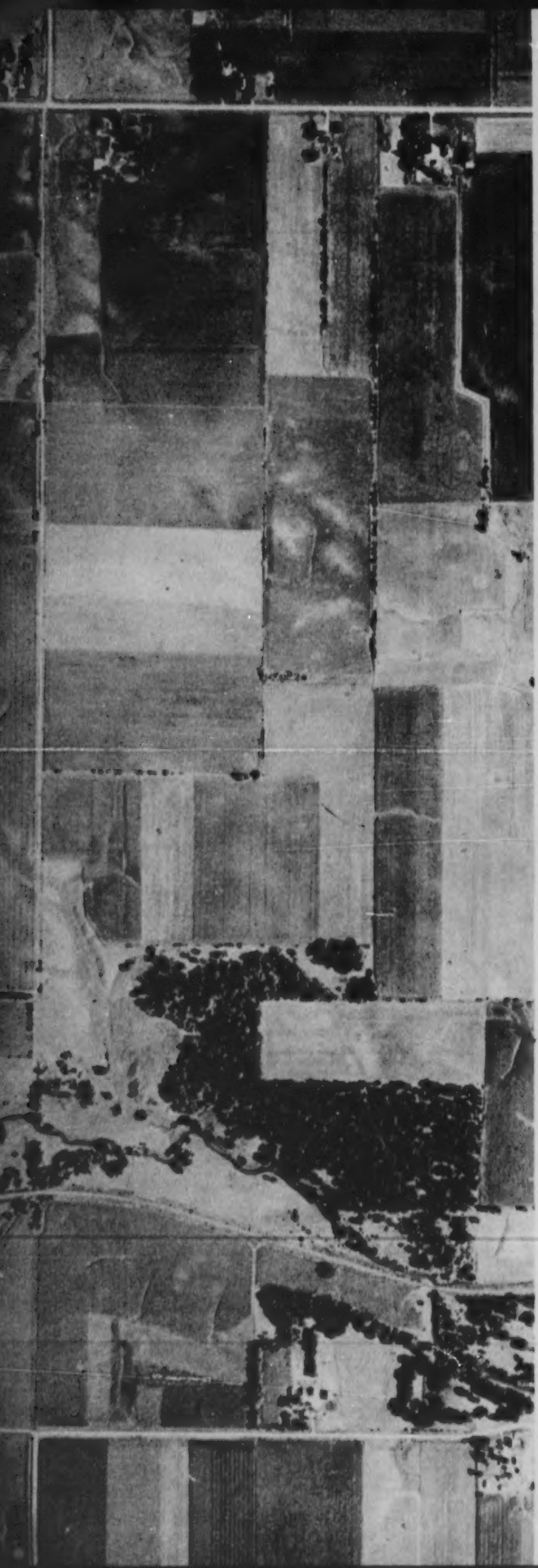
Alternatively, if the students in your class are drawn from a wide area, you could build up a survey from a questionnaire completed by the class.

4. Is there any pattern in the distribution of households preferring particular types of music? Alternatively, do people in some areas have markedly different preferences from those in other areas?

What reasons can you suggest to account for a pattern of distribution, if one does occur?

Your study of the data may suggest new problems for investigation, or the need for other data


140



to try to explain the distribution. On the other hand, you may decide that the distribution is due to sheer chance.

Newspaper 'hit chart' survey

Survey the hit charts in your daily newspaper. On a world map, mark the home locations of the musicians and also, if possible, the writers of each hit listed in the charts. Add to this map as new hits arise over a period of, say, one month. Now find some newspapers which are several years old, and make another map.

Compare the two maps. In which parts of the world does the pop music we listen to in Australia originate? Have the places of origin changed over the years? Why do the pop tunes originate in these areas, and not in others? Why do these pieces of music spread to some areas and not to other areas of the world?

Another research suggestion is to examine the words of songs about particular places; what impression of the places do the songs convey? For example, what impression do you get of San Francisco from the lyrics of 'I Left my Heart in San Francisco', 'San Francisco Nights', 'If You're Goin' to San Francisco', etc.?

Figure 6.36: Vertical aerial photograph of the Greenfield farm and surrounding district (refer to figure 6.6 if you need help to locate the farm)

7

Eastern Europe

Unit A: Communism—the force of men's ideas in space

> Modern bourgeois private property is the final and most complete expression of the system of producing and appropriating products, that is based on class antagonisms, on the exploitation of the many by the few. In this sense, the theory of the Communists may be summed up in a single sentence: Abolition of private property. . . . the first step in the revolution by the working class is to raise the proletariat to the position of ruling class, to win the battle of democracy. . . . the proletariat will use its political supremacy to wrest, by degrees, all capital from the bourgeoisie, to centralise all instruments of production in the hands of the State. . . . in place of the old bourgeois society, with its classes and class antagonisms, we shall have an association, in which the free development of each is the condition for the free development of all.
>
> Karl Marx, *The Communist Manifesto* (1848)

> It is hard to resist the conclusion that the basic problem of all marxists—Leninists, Trotskyists, Maoists, the lot—is their belief that they alone understand the 'laws of history', and therefore that they alone are entitled to exercise the power that will make history unfold for them. They quarrel bitterly among themselves about which faction possesses the truth. But the result, whichever faction wins, is liable to be the same: the concentration of power in a few men's hands, intolerance of rival ideas, the suppression of opposition, and the emergence of dictatorship. The cause of most tragedies is arrogance. It is no different with the tragedy of marxism.
>
> Brian Beedham, *The Crisis of Communism*,
> The Economist Brief 14 (London, 1970)

Communism (or marxism) is a philosophy or set of ideas developed largely by a German philosopher, Karl Marx (1818–83). These ideas grew out of Marx's observation of the lives of people in mid-Victorian Britain. He was overwhelmed by the contrasts between the rich and the poor, and by the inability of the poor people to improve their lives because all land, factories and shops were owned by 'the wealthy'.

Marx felt that this was most unjust, and through a series of books, pamphlets and speeches he urged the workers of western Europe to take over their governments and confiscate property from those who had it. Workers would run the factories, farm the land, and carry out trade for the benefit of all people.

The present-day importance of marxism

The importance of these marxist ideas to the world today lies in the fact that the governments of a number of countries call themselves communist (or marxist)—see figure 7A.1. The governments of such countries as the Soviet Union and China have made important decisions affecting industry, farms, city growth, and education, which are very different from those made by the governments of Australia, the United States, Britain and many other countries. The beliefs which have influenced their decisions are in many ways different from ours. Their ideas about the development of their countries must be considered before we can understand the patterns and distributions which result.

The meaning of ideas to geography

What do we mean by the importance of ideas or philosophies? All human beings normally have the same needs and hopes, but their methods of trying to satisfy them may vary from one society, or one nation, to another. This is because there are differences in people's personal characteristics, as well as important differences in their past experiences. Last but not least, the regions of the world or the states in which people live vary greatly in their climates, soils and economies.

All this results in differences between the beliefs, customs and attitudes of one group of people as compared with another. Taken together, these characteristics of a people are called their 'culture'. We speak of a French culture, a German culture or a Chinese culture, as well as a Christian or a Hindu culture.

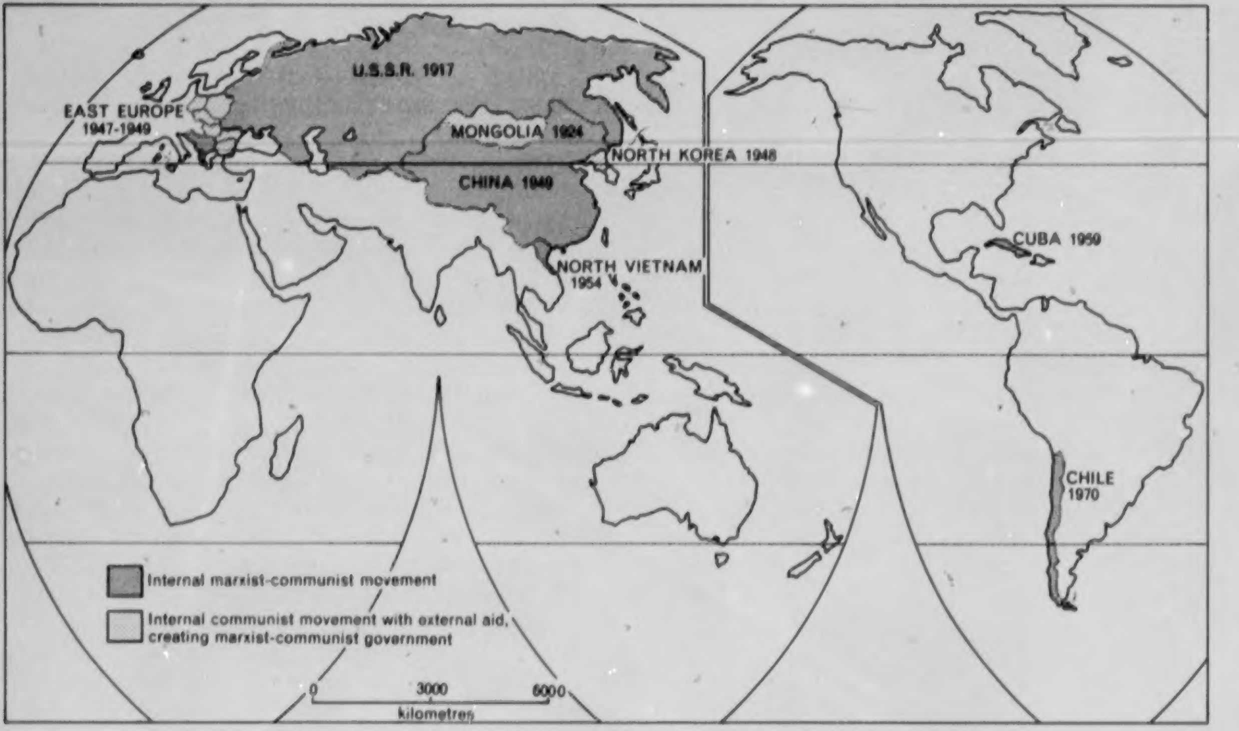

U.S.S.R. 1917
EAST EUROPE 1947-1949
MONGOLIA 1924
NORTH KOREA 1948
CHINA 1949
NORTH VIETNAM 1954
CUBA 1959
CHILE 1970
Internal marxist-communist movement
Internal communist movement with external aid, creating marxist-communist government
0
3000
6000
kilometres

Figure 7A.1: Marxist–communist governments

The ideas which develop within a region of the world, or are acquired from somewhere outside that region, can result in rapid changes in town patterns, farming, trade, etc. This is why the force of ideas is of significance to geography. A Roman city, with its rectangular street pattern and group of public buildings, carried out essential tasks differently from the way they were carried out a thousand years later in the tightly clustered towns of medieval Italy. Again, the contrast between the narrow-fronted cottages and the large landscaped homes of Melbourne and Sydney in the last century reflected the views of a community which had a clear idea of the difference between the rich and the poor. We only have to compare these townscapes with the housing styles and street patterns of today to see how these ideas have changed.

Changes in the way the individual views his surroundings (his town, district or country) can come gradually (as they have in Australia), or they can come more suddenly. Sudden change most often occurs in a country whose culture has not been able to deal with important problems facing many of its people. More and more people become dissatisfied, and eventually they are able to force a change of government. The new group in power may have ideas and beliefs in direct contrast to those of the previous government.

When this sudden change occurs unlawfully or violently, hatreds between people are strong, and persons with close ties to the old government (politicians, civil servants, factory and land owners) may lose their jobs or their property, if not their lives. This type of change in government is called a 'revolution'.

Communist groups in the countries shown in figure 7A.1 have all gained power with the aim of changing the people's views of their community and country, in many cases much more suddenly and forcibly than has happened in the modern history of Britain or Australia. Therefore, to speak of the 'force of ideas' is most appropriate.

The Communist Revolution in Russia

The government of the Russian tsar (king) collapsed as a result of pressures caused by World War I. This enabled Lenin and his followers (the Bolsheviks) to make use of the general dissatisfaction and panic to take over the government. Thus the largest country in the world was the first to have a government with a marxist philosophy.

The Russian environment

This takeover of power within Russia in October 1917 is called the Communist Revolution. It was the beginning of a new era of government by a group of men whose ideas were based on the theories of Karl Marx.

However, their policies were to be carried out in a country with a distinctive environment, and among a people whose attitude to their environment had been formed by the following influences: the location of Russia on the globe, the conditions of climate and soils, and a series of different cultural influences.

Russia is a country of continental proportions, with monotonous relief; it is largely landlocked, and has most of its land area north of 50°N.

Refer to figure 7A.2 and describe briefly the disadvantages of Russia's climate and soils.

During World War II, the Japanese found that Australia was difficult to attack. Why was this so? Is European Russia harder or easier to defend against conventional (non-nuclear) attack? Why? What about eastern (Asiatic) Russia?

Which ocean does most of Russia's coastline face? How might this influence Russia's desire to have ports on other oceans?

The stresses resulting from these physical characteristics encouraged a way of life which valued strong government control and group action, rather than the rights of the individual to act as he chooses for his personal ends. Throughout history, Russia has only enjoyed peace and prosperity for short periods between wars and invasions.

In the late nineteenth century, Russia experienced the introduction of technology and capital from the developed industrial nations to the west. European money (from France and Belgium in particular) was being used to develop the coal, iron ore and petroleum deposits of the Ukraine and Caucasus. Railways, tramlines, gas and electric light were introduced. At the same time, Russian society still remained remarkably old-fashioned, with a small upper class of landowning nobles and government officials. These people had adopted a way of living strongly influenced by French society, but at the same time they enforced a system of government in which the tsar's decisions were absolute. Four-fifths of the people still depended on the land for their livelihood, and much of this land was in the hands of the nobility and the church. Dissatisfaction with a society based on inequality was increasing. All it needed was the pressures of World War I to bring about its collapse.

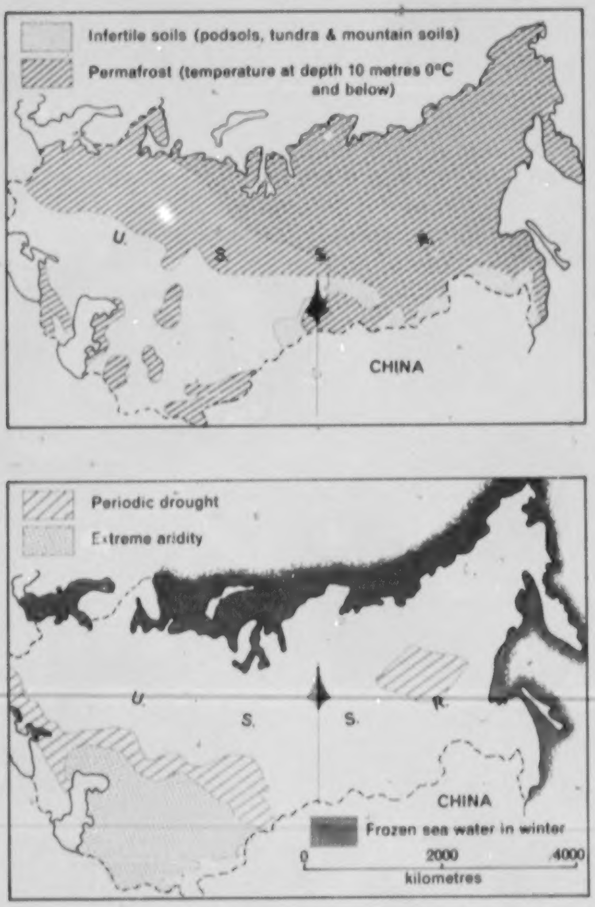

Infertile soils (podsols, tundra & mountain soils)
Permafrost (temperature at depth 10 metres 0°C and below)
U. S. S. R.
CHINA
Periodic drought
Extreme aridity
U. S. S. R.
CHINA
Frozen sea water in winter
0 2000 4000
kilometres

Figure 7A.2: The 'anti-resources' of the U.S.S.R.

Communism in the Soviet Union

As a result of a number of factors, throughout the country's history the Russian people have treated foreign influences with suspicion, have preferred to be led by a small group of men, and have adopted a communal tradition of work. In the harsh environment, land has been developed by groups rather than by individuals, and through the division of work among the villagers, guided by the local leader.

The marxists' belief in the right of 'the people' or 'the working class' to overthrow the wealthy, property-owning class who controlled the government was readily accepted by most Russians. A great number of the people felt unjustly treated under the rule of the tsars. After 1917, the communist government took over all factories, mines, transport, banks, trading companies and large farms, and announced its aim of managing them in the interests of the whole people.

Lenin, the leader who guided the Communist Party to power in 1917, had organised it in such a way that all important decisions would be made by the small number of party members who sat on its Central Committee. As a result, by the mid-1920s power had become as centralised as it was before 1917. The Russian tradition of strong government control was continued.

Among the most significant results of the Communist Revolution were the major changes which subsequently occurred in farming, industry, transport, and city growth. We will look at these in the later units of this study.

The spread of communism

Early in World War II, Nazi Germany occupied the countries between herself and the Soviet Union, and eventually launched an invasion of Russia in June 1941. After a terrible struggle, the tide turned and the Russians pushed back the German forces; by 1945 the Russian army had gained control of eastern Europe. The Soviet government was determined to have friendly governments in these countries lying between Russia and Germany. Apart from that, the government was intent on spreading the marxist revolution to other countries. Between 1945 and 1949, the presence of the Russian army enabled communist groups to come to power in all eastern European countries. The only major variation was in Yugoslavia, where the communist leader, Marshal Tito, and his guerrillas gained control of the country without Russian help (see figure 7A.1).

After coming to power, the communist governments of eastern Europe used the Soviet Union as the model for the policies which they introduced. The marxist idea of government control of all property was put into practice: industry, mining, transport, banks, insurance companies were all nationalised (taken over by the government). Farms were reorganised, as had happened in Russia (this is dealt with in Unit C).

China and others

Another important communist revolution occurred in 1949, when Mao Tse-tung led his communist

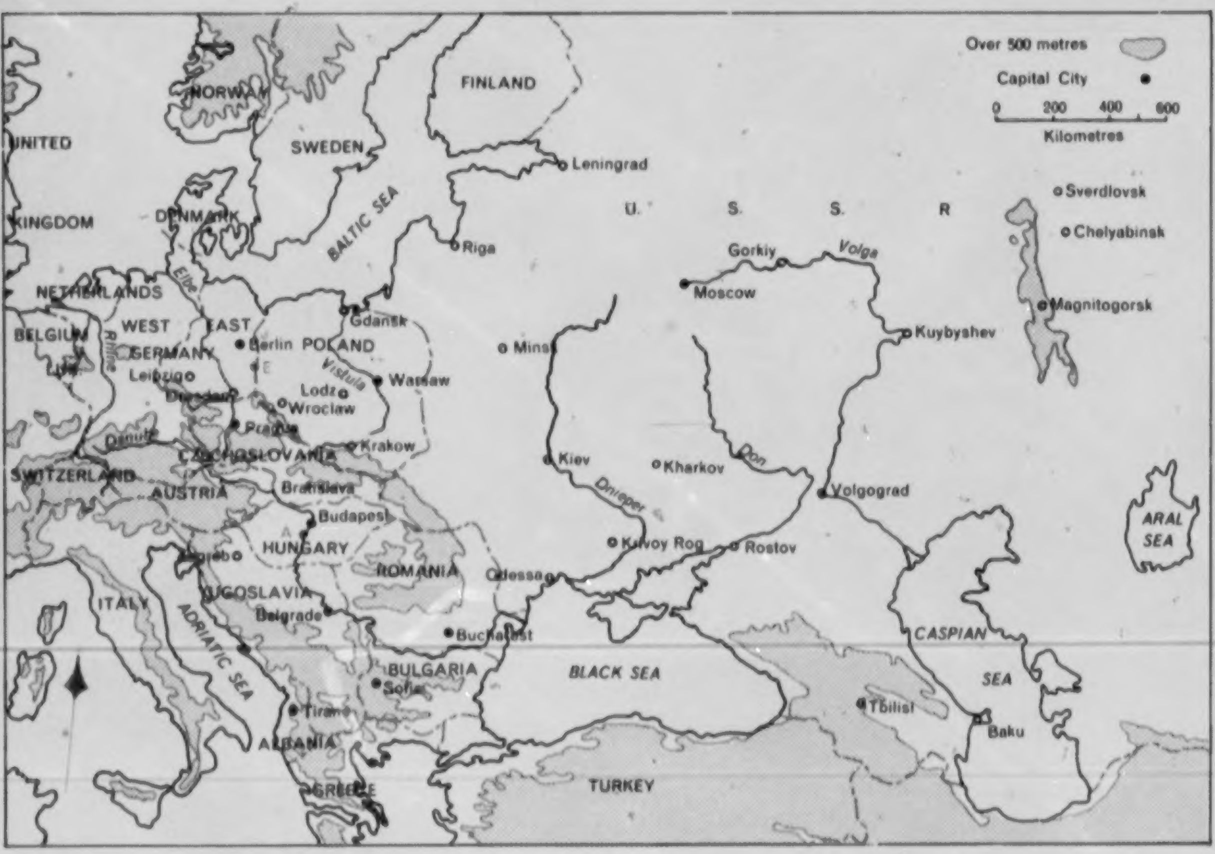

Over 500 metres
Capital City ●
0 200 400 600
Kilometres
FINLAND
NORWAY
SWEDEN
NITED
KINGDOM
DENMARK
BALTIC SEA
Leningrad
Riga
U. S. S. R
Sverdlovsk
Chelyabinsk
Magnitogorsk
Gorkiy
Volga
Moscow
Kuybyshev
NETHERLANDS
BELGIUM
WEST GERMANY
EAST GERMANY
Elbe
Rhine
Berlin
POLAND
Gdansk
Vistula
Warsaw
Minsk
Leipzig
Dresden
Lodz
Wroclaw
Prague
Danube
Krakow
CZECHOSLOVAKIA
SWITZERLAND
AUSTRIA
Bratislava
Budapest
HUNGARY
Zagreb
Kiev
Kharkov
Don
Dnieper
Volgograd
ARAL SEA
Krivoy Rog
Rostov
ROMANIA
Odessa
YUGOSLAVIA
ITALY
Belgrade
ADRIATIC SEA
Bucharest
CASPIAN SEA
BULGARIA
Sofia
BLACK SEA
Tirana
Tbilisi
Baku
ALBANIA
GREECE
TURKEY

Figure 7A.3: Eastern Europe and the western Soviet Union

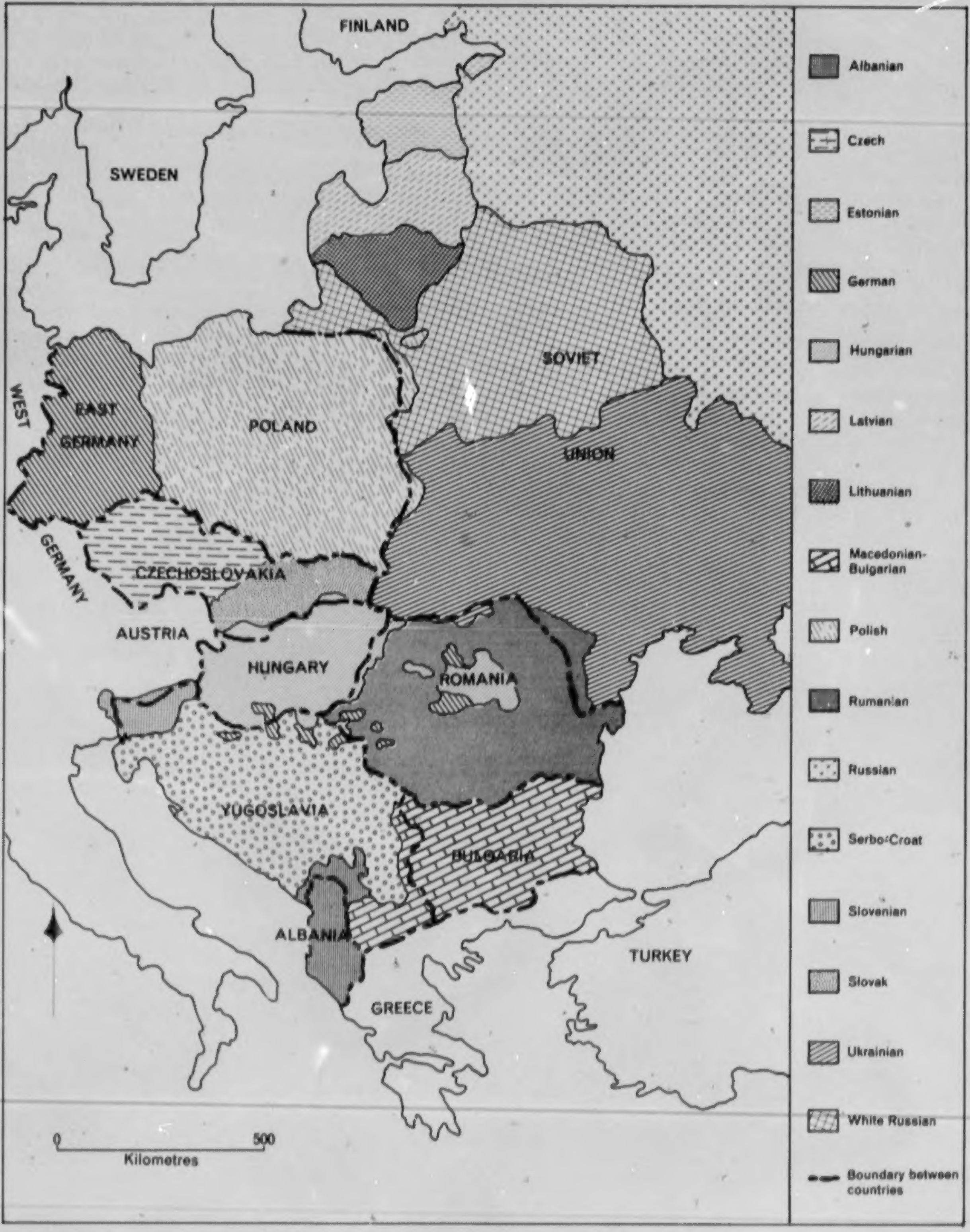

FINLAND
SWEDEN
SOVIET
UNION
EAST
GERMANY
WEST
GERMANY
POLAND
CZECHOSLOVAKIA
AUSTRIA
HUNGARY
ROMANIA
YUGOSLAVIA
BULGARIA
ALBANIA
GREECE
TURKEY
0
500
Kilometres
Albanian
Czech
Estonian
German
Hungarian
Latvian
Lithuanian
Macedonian-Bulgarian
Polish
Rumanian
Russian
Serbo-Croat
Slovenian
Slovak
Ukrainian
White Russian
Boundary between countries

Figure 7A.4: Communist Eastern Europe—ethnic environments

movement to power in China. This movement was originally supported by the Soviet Union, but since 1960 Communist China has been following an independent policy. In China, the marxist idea has been adapted to suit a country with the largest population of any state in the world (estimated at over 800 million), most of whom are peasant farmers.

Marxist governments are also in power in Cuba and Chile. These developments show how successfully the marxist ideas can be modified to suit the physical and cultural environments of the different countries in which they have been adopted (see figure 7A.1). However, our studies will concern themselves with those communist states in close proximity to the Soviet Union (figures 7A.3 and 7A.4).

FURTHER ACTIVITY

A simulation game: how do ideas spread?

Have you ever thought about how new ideas spread? Your teacher will issue each member of your class with a sheet of paper.

Some of the sheets will have specific items of information written on them. You are allowed to spread this information around the class by any means which your teacher permits!

This should help the whole class to think about and discuss how new ideas spread.

Would the ideas of the Soviet Union be as influential in Chile as in Poland? What is the reason for your answer?

Table 7A.1

Country	Area (square kilometres)	Population (1970 estimate)	Capital and largest city	
Albania	28 748	2 168 000	Tirana	169 300 (1967 est.)
Bulgaria	110 912	8 490 000	Sofia	858 140 (1969 est.)
Czechoslovakia	127 869	14 467 000	Prague	1 102 060 (1968 est.)
East Germany	108 174	17 257 000	East Berlin	1 083 173 (1969 est.)
Hungary	93 030	10 331 000	Budapest	1 934 000 (1969 est.)
Poland	312 677	32 805 000	Warsaw	1 283 900 (1969 est.)
Romania	237 500	20 253 000	Bucharest	1 457 802 (1969 est.)
Soviet Union	22 402 200	242 768 000	Moscow	7 061 000 (1970)
Yugoslavia	255 804	20 527 000	Belgrade	772 000 (1969 est.)
Australia	7 686 810	12 881 100 (1971 census)	Sydney Canberra	2 799 634 (1971) 141 575 (1971)

Source: *United Nations Demographic Yearbook*, 1970, and 1971 census of Australia

Table 7A.2: Per capita income in $U.S.—selected countries (1968)

U.S.A.	4360	Japan	1350	Yugoslavia	520
Sweden	3200	East Germany	1350	Brazil	240
Canada	3000	Czechoslovakia	1140	Egypt	160
Switzerland	2790	Soviet Union	1000	South Vietnam	120
France	2540	Hungary	910	China	100
Australia	2470	Spain	870	Indonesia	100
West Germany	2210	Poland	820	India	90
Britain	1840	Romania	730	Pakistan	90
Italy	1420	Bulgaria	710		

Source: *United Nations Demographic Yearbook*, 1970

Unit B: Building modern economies

The Soviets have often astounded the world with their accomplishments in space, defence and science, while perplexing the world by their continued failures in agriculture and light industry.

M. I. Goldman, 'The Soviet Dual Economy', *Current History*, October 1970

Economic development has been a basic aim of all communist governments since Lenin brought the Communist Party to power in the Soviet Union in 1917. The communist state had to be made strong, and the people had to be given a higher standard of living.

Communists believe that investment of capital in factories and farms by private citizens is only to the financial benefit of the person who has the capital to invest. Therefore, all property and sources of capital (such as banks) must be taken over by the state. This takeover was completed in the Soviet Union by 1929, and in the countries of East Europe between 1946 and 1949.

As a result, the decisions about economic development in communist countries are made differently to those in 'free-enterprise' states such as Australia and the United States. Who are the people involved in deciding where a steel mill would be located in Australia, or in Japan? List the locational factors they might consider. (Reference to the discussion of the industrial system in *Man and Space*, page 80, may help you to answer this.)

In a communist state, decisions concerning the location of a new factory, railway line or farm development scheme are made by government officials. These government officials are the planners in the central planning offices, whose task it is to draw up guidelines for all large projects in the country. Before being put into effect, their recommendations have to be approved by the leaders of the Communist Party, as the Communist Party guides all aspects of development.

Location principles in the Soviet Union and East Europe

Marxist governments have located industry according to decisions based on the following guidelines:

1. Industries should be located near the natural resources they use. This guideline is particularly important to such industries as iron smelting and the treatment of bauxite; that is, industries processing a mineral, or those using large amounts of energy. The iron and steel plants in Upper Silesia (southern Poland) were sited on this principle, as was the integrated iron and steel works at Krivoy Rog, north of the Black Sea in the Soviet Union. Related to this guideline is:

2. Regional self-sufficiency—each district within the communist state should be self-sufficient (as far as possible) in all farm products and industrial goods. This principle stemmed from the marxist belief that the capitalist countries had been exploiting their colonies, and not allowing them to build factories which might compete with those in the 'mother country'. Therefore, a communist government should ensure that all districts under its control were given equal opportunity for development. Many factories built in the Urals region of the Soviet Union (for example, at Magnitogorsk) and in western Siberia (at Kuznetsk and Karaganda) were influenced by this guideline. This same aim of regional self-sufficiency has led to the spreading of industry to the less-developed provinces of Yugoslavia. (This is dealt with in Unit E.)

The Soviet Union is now trying to apply this regional self-sufficiency idea on a broader scale, to herself and the communist states of East Europe: each state within the Soviet-led 'communist bloc' of states is to specialise in certain industries, and the whole group of states is to be self-sufficient and not have to depend to any great extent on non-communist states.

3. Safety from attack is a major consideration in the location of industry. This has favoured sites for factories as far as possible from boundaries with other states. Examples are the centres of heavy industry established in Siberia (U.S.S.R.), and the preference which the East German government has given to centres as far as possible from the boundary with West Germany.

4. Industries should be located near centres of consumption—this applies particularly to factories which make component parts for the products of other factories; it also applies to those factories where transport costs are reduced if they are close to the people who will use their product (the consumers). The tractor works built in the Soviet Union in the 1930s at Kiev, Rostov and Kharkov were central to the rich farming districts of the Ukraine. The further growth of factories in such cities as Warsaw, Budapest, and Prague has occurred because of their importance as markets, in view of their large populations, as well as the fact that the factories are long established (dating back to the nineteenth century). The importance of 'markets' has been recognised by planners in all communist countries.

We can identify two types of factory development. The first has occurred in centres that were already important, such as those mentioned above. The second has occurred at completely new sites, where previously there was only farmland or small rural villages. Therefore, the communist governments have had to build not only factories, but new towns also.

Between 1926 and 1963, over six hundred of these new towns were established in the Soviet Union; Magnitogorsk is one important example of such development. New industry centres were also founded in the East European countries.

We shall look at one such place to understand how and why this was done, and the changes it is producing. The place is in Hungary and is called Dunaujváros (pronounced *do-na-ooey-ya-varosh*), which means 'Danube New Town'.

Dunaujváros: a new industry centre

Imagine that the year is 1950, and you are on the team of planners for building up the industry of Hungary. Here is some basic information about the situation—it will help you decide where in Hungary to build a new steelworks. For a start, to make just *one* tonne of steel, you need

- over a tonne of black coal
- a tonne of iron ore (high grade)
- smaller amounts of limestone and manganese
- very large quantities of water.

When the steel is finally made, you must have some other industries wanting to use it (a market).

In 1950, most of the industry which could use this extra steel is to be found in the capital, Budapest (see figure 7B.1). But official policy is to develop new industry in parts of the country where there is little industry, and where there will be many farm workers looking for new jobs after changes in agriculture have taken place. (You will find out more about this when you reach Unit C.) You can work out where this surplus of workers might be from figure 7B.2.

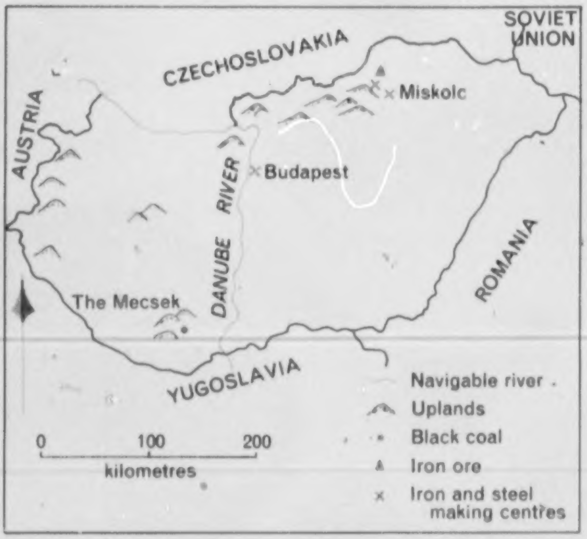


Figure 7B.1: Information map, Hungary, 1950

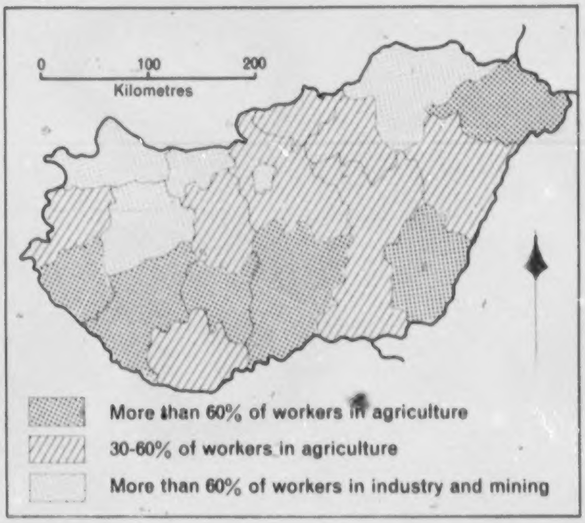

0
100
200
Kilometres
More than 60% of workers in agriculture
30-60% of workers in agriculture
More than 60% of workers in industry and mining

Figure 7B.2: People working in agriculture

Coal that could be used in the blast furnaces is found at only one place in Hungary (see figure 7B.1), but better-quality coal is already imported from the Soviet Union, Poland and Czechoslovakia.

There are already steel-producing centres at several places (see figure 7B.1), using the small deposits of iron ore found in the Northern Mountains. The Soviet Union then offers to sell Hungary high-quality iron ore from Krivoy Rog (see figure 7A.3) over a period of many years.

Now, remembering the methods that can be used for transporting these raw materials and the steel produced (look carefully at figure 7A.3), and also remembering the government policy on locating new industry, suggest a site on figure 7B.1 for Hungary's new steelworks.

Compare your site with those of some other students in your group: did you choose a similar place for the same reasons, or, if it was a different place—why? If there was no official policy to locate in new areas, would you have chosen another place? Where?

Now look at figure 7A.3 for the real site of Dunaujváros (shown by the letter 'A').

Where there was once a small village and farmlands, there is now a town of over 50 000 people (figure 7B.3). Dunaujváros has a number of other

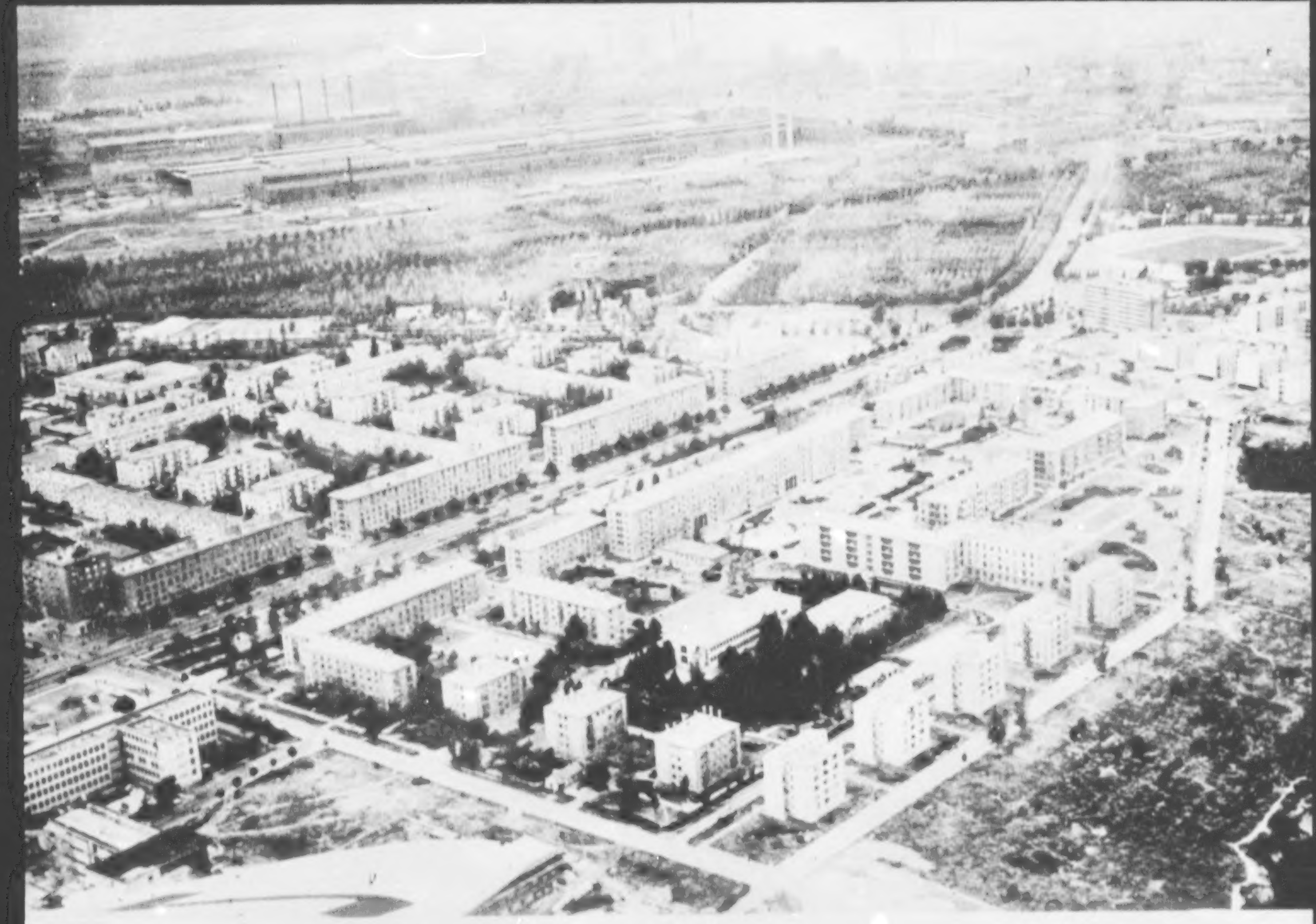


Figure 7B.3 Dunaújváros

industries besides the Danube Iron Works which employs over 12 000 [illegible], and in many ways this town has become a national symbol. In the early years thousands of students and volunteers spent their holidays helping build the new centre. Today it is a modern town with almost all the amenities of the older cities: special technical [illegible], hostels for unmarried workers, and a central House of Culture.

[illegible] figure 7B.[illegible] [illegible] of Varos is occupied by housing and by industry. What do you find between the two areas? What did you put on the tracing [illegible]? Why do you think it is [illegible]?

Look at the [illegible] from the chimneys of the industrial area; what planning decisions have been made [illegible] and the [illegible] of the housing? If the [illegible] had been built in Budapest, what problems might this have created?

Mark on your tracing [illegible] the industrial [illegible] of Dunaújváros [illegible] [illegible] [illegible] would this always be possible if the industry had been built in one of the large cities?

Now select the better title for your tracing from these two: Dunaújváros; Land Use in the Dunaújváros Area.

Look back to the housing area: how is it different from your home area? What tells you that this area has been planned? Shops, schools and recreation areas are in the centre of the housing blocks; is this a better plan than your local area's layout?

What other towns do you know that have been planned and built recently—in Australia and in other parts of the world? For what reasons were they built?

Refer to table 7B.[illegible] and figure 7B.4. Why do you think the building industry is employing so many people? Why would the method of building shown in figure 7B.4 be very convenient for these housing programmes throughout Hungary and in other parts of the world?

Table 7B.1: Work in Dunaujváros

Industry	Total employment
Danube Iron Works	12 000
Building industry	3 000
Straw cellulose plant	1 300*
Men's clothing plant	1 000
Worsted spinning	800
Lingerie manufacture	400
Watch assembly	300*
Sandal shop	80
+ printing, beer bottling, bakery, dairy, and soda water manufacture	
	= 20 000 approx.

*Being expanded in 1971–75

About 6000 of Dunaujváros's workers do not live in the new town. Instead, they travel daily or weekly from within a radius of 30 kilometres of the town. Can you suggest what their work might have been before Dunaujváros was created? (Remember one of the reasons you decided to put the new steel industry in this type of area: figure 7B.2 will refresh your memory.) In many cases, these workers prefer not to live in the town, because of their wives' work and special privileges they hold: what could this work be, and what is the special privilege? ('Farming in the backyard', pages 154–5, will help you answer this.)

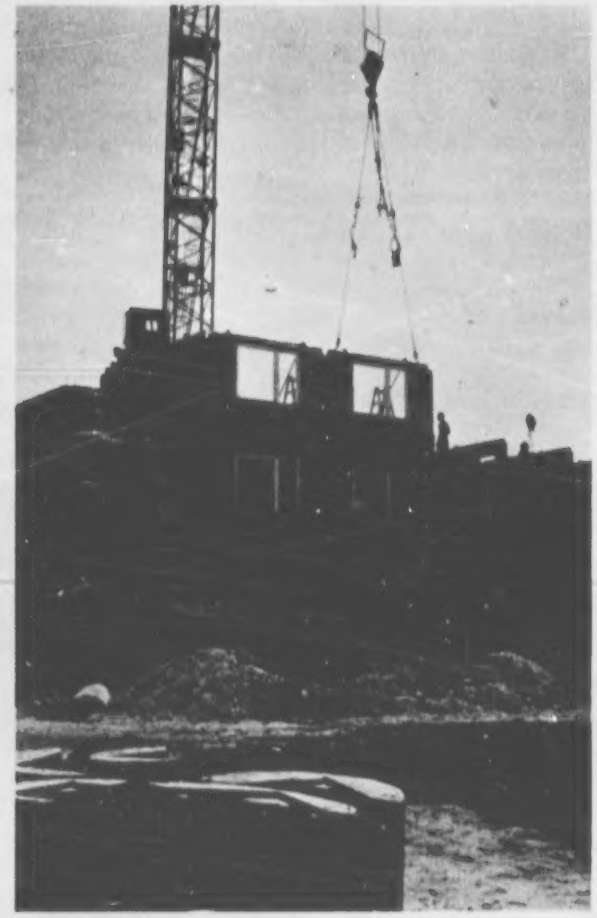


Figure 7B.4: How Dunaujváros grows—blast furnace slag is used in these sections, which can be produced with kitchen, bathroom and toilet fittings

In all of Hungary, half the workers in industry were once peasants working in agriculture. Look at table 7D.1 (page 156) to see how the number of people living in cities in Hungary and East Europe has changed with the growth of industry.

Another case: Eisenhüttenstadt in East Germany

Eisenhüttenstadt was founded in the early 1950s. This new iron and steel centre uses imported coke from Poland and the Soviet Union, and Soviet iron ore. Its population, like that of Dunaujváros in Hungary, has grown rapidly with industrial expansion and is now over 40 000.

Look at table 7B.2 on page 144 and find East Germany's steel production. Can you see where Eisenhüttenstadt's steel started to increase the total amount of steel produced?

Now find Eisenhüttenstadt's location on figure 7A.3 (marked 'E'): what advantage is it to be so close to the foreign border?

This is a new area—do you think it would be an attractive one in which to work and live?

From your study of Dunaujváros, suggest other industries that could be established in Eisenhüttenstadt, and the probable effect on the surrounding agricultural area.

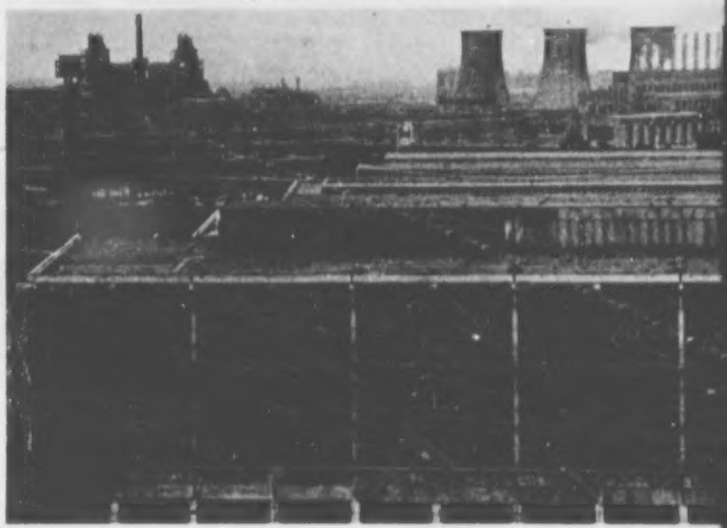


Figure 7B.5: Eisenhüttenstadt, East Germany

Other new steel centres

Looking at figure 7B.6 and then figure 7B.7, you can see that the building of new steel centres like Dunaujváros and Eisenhüttenstadt has occurred at many places in East Europe and the Soviet Union.

Remember that not all centres produce similar amounts of steel. The centres in the Ural Mountains of the Soviet Union are the largest, while those in the southern parts of the Soviet Union are quite small.

In the Soviet Union in the 1940s, would you say that industry was concentrated in a few centres, or spread fairly evenly across the country? What danger was there in this situation in the case of an attack on the country? What difficulty would industry outside these steel areas have had in developing? Do you think this distribution has changed?

Count the number of centres in the East European countries in the 1940s and in the 1970s: which countries have shown the most development since becoming communist? Which of the countries appears to have been most developed before this change?

Which communist nation is without an iron and steel industry in the early 1970s? (It is building one at present with Chinese aid.)

Construction of these new centres, and expansion of existing ones, is carefully planned to help fill the production targets set by the national leaders. As a result, the number of factories, tractors, radios and so on to be made or built can be worked out. Large industrial centres—based on oil and gas supplies (see page 170, Unit E), coal, bauxite, copper and other minerals—have been developed to help achieve these targets.

Because the Soviet Union has developed into a 'super' industrial country, with very large resources of raw materials, power and skills, it has very often planned and assisted in the building of centres in East Europe, and in supplying raw materials to them. Can you remember where Hungary's iron ore supplies came from? Quickly check table 7B.2 on page 144 to see how much larger Soviet industrial production is, compared with that of the East European countries. But remember, the Soviet Union's population is eight times that of Poland, and twenty-four times that of Hungary. At the same time, the specialised industries of the East European countries provide the Soviet Union with many products which are in short supply within her own territory—for example, ships from East Germany, machinery from Czechoslovakia, and chemicals from Hungary.

Leaders and planners of these countries have always believed that they should first build up 'heavy industry'—steel, machinery, power, transport equipment—rather than produce things people would buy in shops. This is a major reason why the shopping areas of communist cities may be rather 'poor' in appearance when compared with those of Western cities. (Quickly check out figure 7D.6, page 157.) However, now that heavy industry has been established, more effort is being put into producing goods for the people—a wider variety of clothing, TV sets, radios and cars. Which sections of table 7B.2 show these developments?

Cars provide a good example of this change. From an Australian viewpoint, living standards are still low, for most families cannot afford to buy a car. (Look at the prices of goods and the wages people earn in table 7D.2 on page 159.) But, as living standards rise, the people are demanding more cars. To help meet this demand, Fiat of Italy are now producing cars in Poland, Romania, Yugoslavia and the Soviet Union. In 1970, at the end of the Soviet Union's Five Year Plan, mass production of cars was started in four new centres, in addition to the extension of existing plants. The Moscow Car Works now produces more than 110 000 cars a year, and a new production line will raise this figure to around 200 000.

Look over the figures in table 7B.2 which provide data on some goods produced in the communist countries, together with Australia and the United States.

Of the communist countries, which one is always the largest producer of goods? Can you suggest why this is so? How does this nation's production of these goods compare with that of the United States—the world's wealthiest nation?

How does Australia, which is a small nation in terms of population, compare with the countries of East Europe in the output of these goods? Do we produce more than the Soviet Union for any of the items given? What does this tell you about our living and industrial standards, and our material resources?

Look at the 'cars produced' figures: what do you notice with Hungary? During 1971–75, over 300 000 new cars should be sold to Hungarians—suggest a convenient source. Which other countries did not produce cars until recently? What advantage do you think there is for *small* countries *not* to produce cars?

Cars produced and bought are a very good indication of how 'well-off' a country is. How does Australia rate in comparison with the others listed? What is there in the car figures to suggest

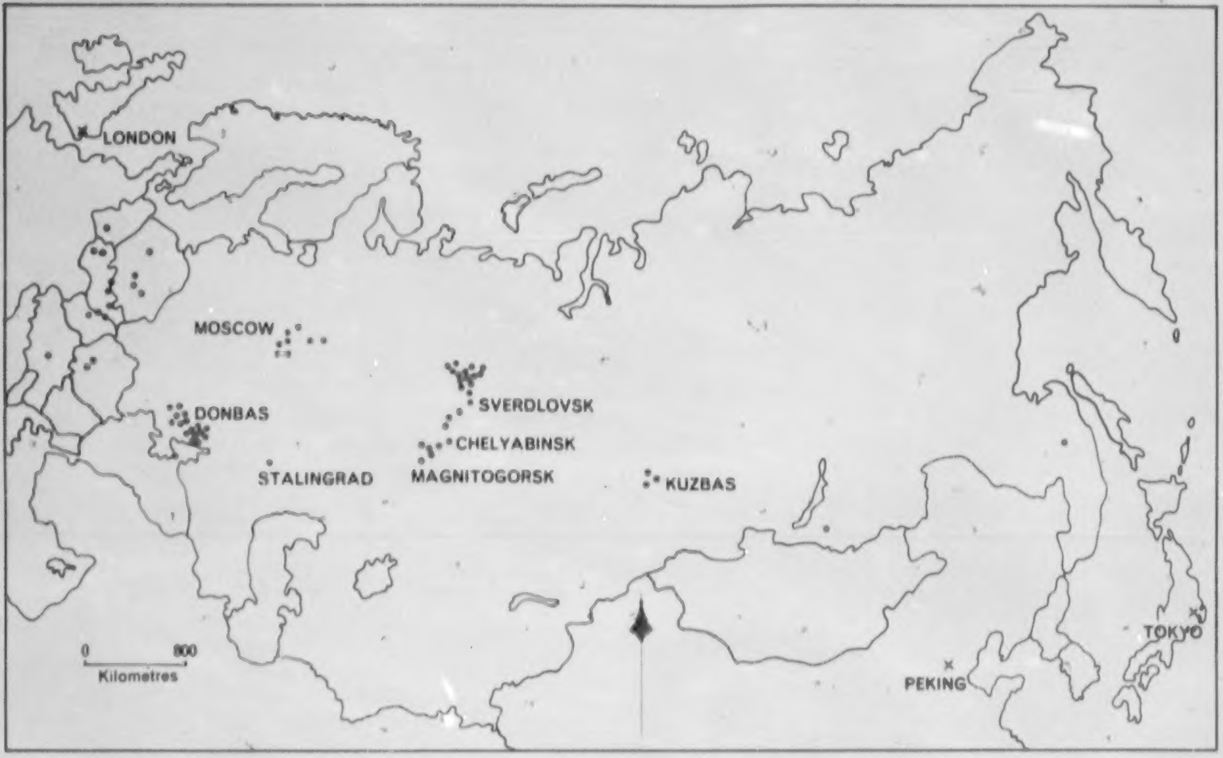

LONDON
MOSCOW
DONBAS
SVERDLOVSK
CHELYABINSK
STALINGRAD
MAGNITOGORSK
KUZBAS
TOKYO
PEKING
0
800
Kilometres

Figure 7B.6: Steel-making centres in the 1940s

Figure 7B.7: Steel-making centres in the 1970s

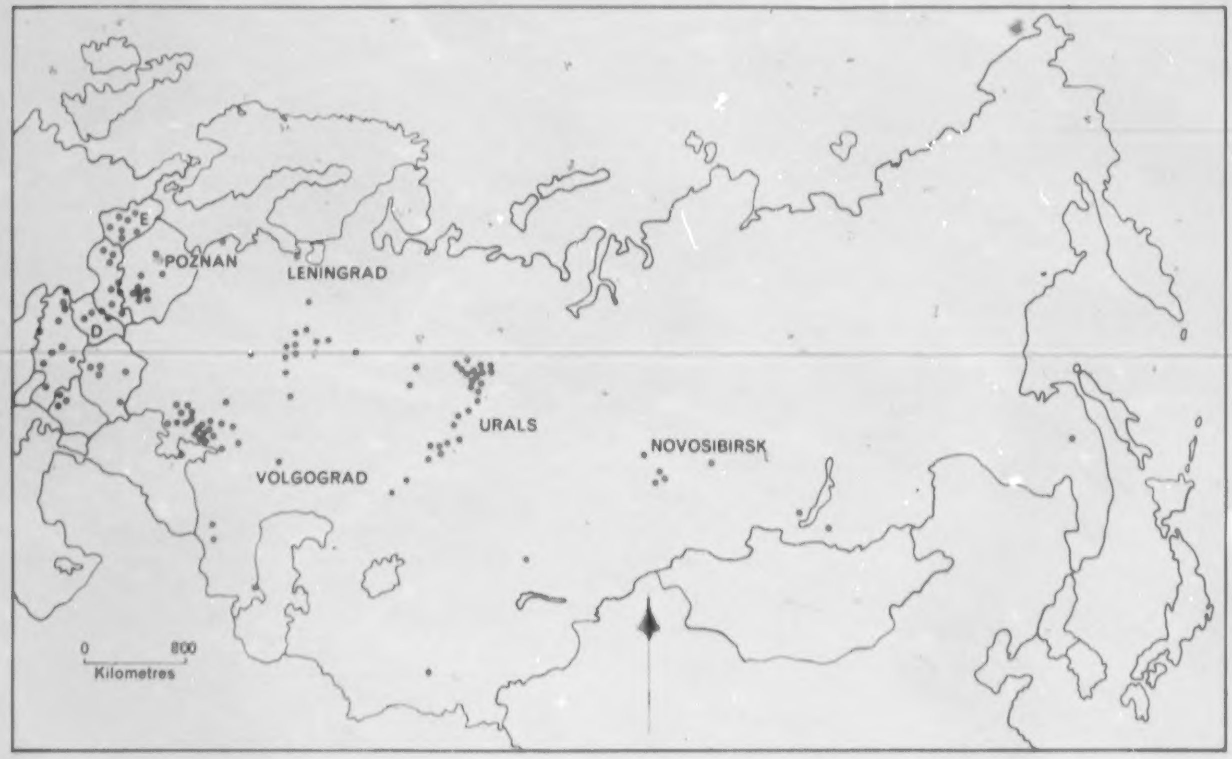

E
POZNAN
LENINGRAD
D
URALS
VOLGOGRAD
NOVOSIBIRSK
0
800
Kilometres

Table 7B.2: Production statistics for selected commodities—U.S.S.R., East Europe, Australia, U.S.A.

STEEL (million tonnes)	1950	1970	1975
Bulgaria	*i*	1·8	2·2
Czechoslovakia	3·1	11·2	15·0
East Germany	·9	5·1	6·0
Hungary	·8	3·1	3·8
Poland	2·5	11·5	15·0
Romania	·5	6·3	10·2
Yugoslavia	·4	2·2	3·0
Soviet Union	26·0	116·0	145·0
U.S.A.	84·0	128·0	158·0
Australia	1·6	7·1	11·0

OIL (crude, in million tonnes)	1950	1970
Bulgaria	*i*	*i*
Czechoslovakia	*i*	·3
East Germany	—	—
Hungary	·5	1·9
Poland	·2	·6
Romania	5·3	13·4
Yugoslavia	·1	3·0
Soviet Union	37·6	353·0
U.S.A.	275·0	475·0
Australia	—	8·3

CARS ('000)	1950	1968/1970
Albania	—	—
Bulgaria	—	4/
Czechoslovakia	24	125/
East Germany	7	115/
Hungary	—	—
Poland	—	/ 70
Romania	—	/ 9
Soviet Union	64	/ 344
U.S.A.	5500	/6552
Australia	120	360/

TRUCKS AND BUSES ('000)	1950	1970
Poland	1	45
Soviet Union	294	784

HOUSEHOLD GOODS (per 100 households)	1960	1970
TV sets		
Hungary	3	55
East Germany	17	70
Refrigerators		
Hungary	1	33
East Germany	6	50
Washing machines		
Hungary	15	52
East Germany	6	50
Cars		
Hungary	1	7
East Germany	3	14

U.S.S.R.—Future Predictions

Refrigerators

1940: 3 500
1970: 4 140 000
1975: 6 686 000

Appliances (per 100 households)	1970	1975
Refrigerators	32	64
TV sets	51	72
Washing machines	52	72

i = insignificant

that people in the communist countries are improving their living standards? Which other sets of figures show changes in living standards?

Compare the figures for cars and those for trucks produced in the Soviet Union and Poland in 1950 and 1970. You should be able to say why more trucks than cars were produced in the past. (Refer back to page 142 if you need help.)

Unit C: Reorganising farming

> Every Communist regime is ideologically committed to carrying out the collectivization of agriculture. Marx, Engels, Lenin—let alone Stalin—expressed mistrust and sometimes contempt for the peasantry, whom they regarded, perhaps rightly, as guardians of the old spirit. In the drive for a classless society the independent peasantry must disappear . . . . .
>
> P. Katona, 'Collectivization of Agriculture in Central Europe', *The World Today*, September 1960

The marxists believed that all power and property should be in the hands of the government, controlled by the class of workers. It is easy to see that the 'family farm' or privately-owned rural property would not have been acceptable to the new leaders of Russia as a permanent feature of the country after 1917. It is therefore not surprising that the communist leaders sought to change and develop farming along lines which are quite different from those to which we are accustomed in Australia. Many people in the Soviet Union, and later in East Europe, suffered because of the rigid methods which the communists used to enforce their policies. However, in most cases the communist governments were strong enough to ignore this. They believed that their ideology gave them the correct answers to the problems which beset agriculture.

Pre-communist farming

Before the communist governments began to

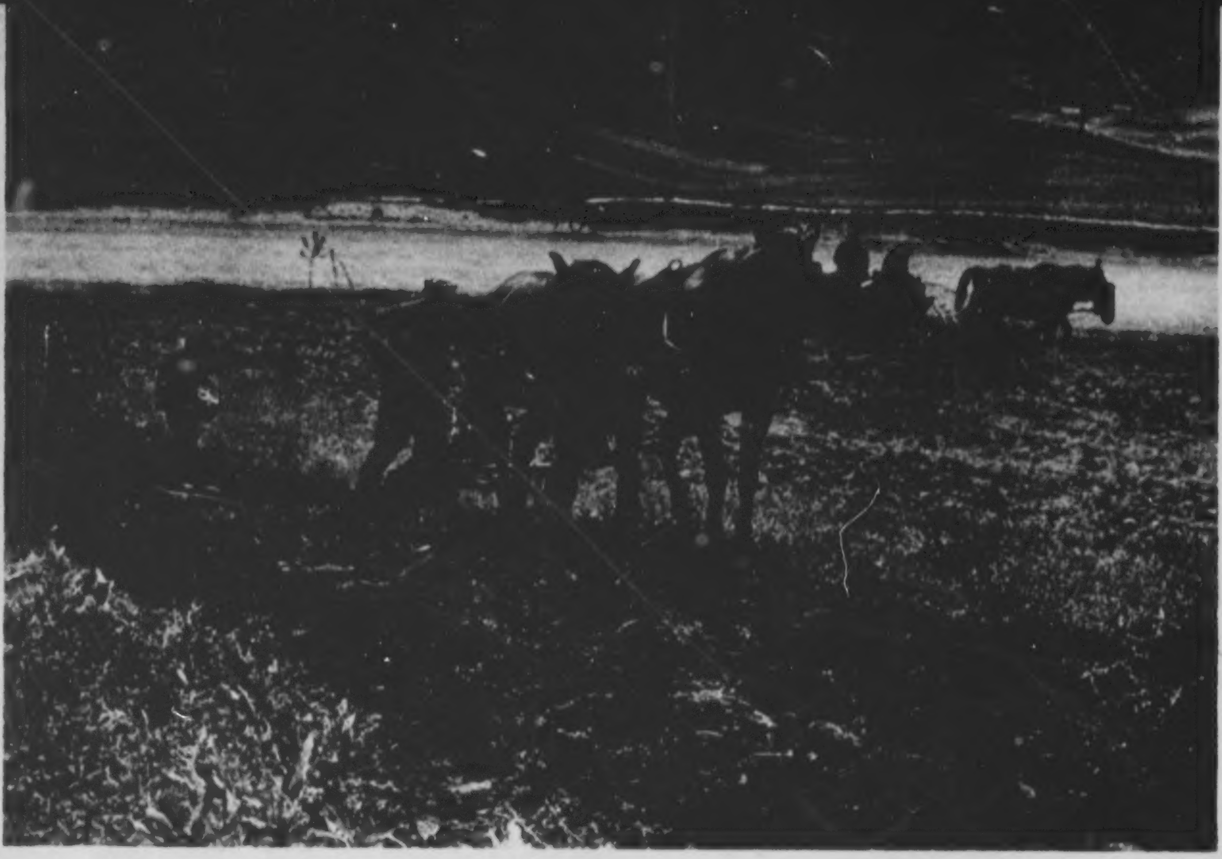


Figure 7C.1

change farming, much of the land was managed as in figure 7C.1, a photograph taken in Hungary in the 1950s. These peasants were lucky. In the Soviet Union thirty years earlier, a third of farmers had no horse or equipment! In such circumstances, how could farming be expected to develop on modern lines, producing enough food for city workers as well as for export?

In figure 7C.1, look for the small strips of land that peasants commonly worked. In Romania, for example, there were originally some 20 000 000 strips of farming land, but these have now been 'collected' into less than 6000 large farms. Of the communist countries, only in Poland and Yugoslavia are small holdings still widely found. From the air, the strips must have looked like those in figure 7C.2, still found in France today.

How difficult would it be to use machinery on these strips? If peasants could afford machinery (a mini-tractor costs $270–450), would they have enough use for it on small holdings?

Would small farming areas or larger ones be better equipped to deal with disasters? with new crops? with new techniques? Can you think of any advantage for farmers in having their land distributed in several places?

What sort of power were the peasants using in

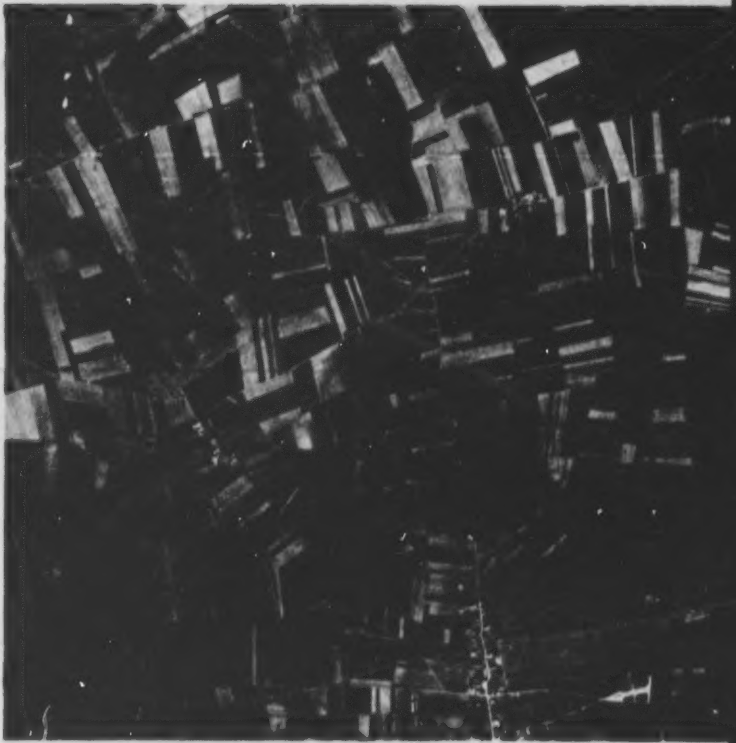


Figure 7C.2

figure 7C.1? What special problems would there be for the peasant family in keeping work-animals, especially in winter?

To find out how backward most pre-communist farming was, look first to table 7E.1 on page 166, giving details of farming equipment in part of the Soviet Union. Now examine table 7C.1.

Table 7C.1: Grain yields (in kilograms for every hectare of farming land)

	1934–38	1961–65	% change
Poland	1380	1725	+25
East Germany	2065	2680	+29
Czechoslovakia	1700	2230	+31
Hungary	1500	2080	+38
Romania	980	1600	+68
Bulgaria	1220	1960	+60
Yugoslavia	1370	1925	+40
Albania	1285	980	—23
West Germany	2030	3070	+51
Italy	1640	2250	+37

From these two tables, you should be able to pick out which countries were developed quite well before they became communist, those which have improved most, and how they all compare now to the two non-communist countries given.

Now look at table 7C.2, showing the number of people who once worked in agriculture, compared with the more recent situation.

Table 7C.2: Percentage of workers in agriculture

Hungary	Romania	Poland
1949 — 50%	1950 — 74%	1931 — 60%
1970 — 28%	1968 — 53%	1970 — 30%

Figure 7C.3: Collective farmlands in Hungary

Figure 7C.4: Getting to the fields in Yugoslavia—to what other uses could the oxen and cart be put?

Communist farming policy

Of all the changes in the landscape since communism was introduced, that in figure 7C.3 is the most significant in appearance. If you travel from West Europe by plane, train or car, this is the first big difference you will see in the landscape. The strips of farmers' land found in West Europe (figure 7C.2) give way sharply to very big fields, sown with one crop or used for grazing large herds—rather like, but often bigger than, the 'typical' paddocks of Australian farms.

What happened to the strips that existed 'yesterday'? To modernise farming methods and abolish private landowners, all the communist governments have tried to *collect* these strips into large farms with big fields, of the type seen in figures 7C.3, 7C.9 and 7C.11.

Often the government met with resistance from some of the peasants, who tried to sabotage the movement: they killed their animals rather than hand them over, and worked less enthusiastically on land they did not think of as their own. This was one reason why farmers were permitted to keep a small plot near their house to raise a few animals, fruit and vegetables (see figure 7C.14). In Poland and Yugoslavia, the opposition of most peasant farmers forced the government to abandon the setting up of collectives, so that these two countries still farm largely by small fields. Can you see any evidence of this in figure 7C.4?

The idea of joint land ownership and joint working of farmland was not only a marxist belief, but also an aspect of medieval Russian culture. The village land organisation or 'commune' allotted a number of strips of land to each family and much of the work was done jointly by the peasants. This system of land ownership survived into the twentieth century. However, many peasants did not have any land at all: in 1917, peasants formed about 80 per cent of the total Russian population, but held only about one-third of the land; the rest was owned by the state, the church and large landowners.

Stalin, the Soviet leader who succeeded Lenin, 'collectivised' nearly all farming land between 1928 and 1933. The communist leaders of East Europe (with the above exceptions) carried out the same policy from 1948 to 1960. Most land and livestock, as well as all sheds, stalls, equipment and machinery, is no longer owned by any private individual. There are two types of farms: the *collective farm* is managed by the workers, and payments are made in both money and produce according to the amount of work done; the other type of farm is the *state farm*, where decisions are made by the appropriate officials from the government and workers are paid a fixed wage.

The government collects the bulk of the farm produce from the collectives at a set price. This price is usually lower than that which the customer has to pay for the same foodstuffs in the shops. The difference between the price the government pays the collective and that which it charges the consumer is a form of taxation used in all communist countries. The government also tries to control the amount of foodstuffs which can be bought in shops, so that some can be exported to the developed countries of the West. The income from this is used to buy industrial machinery, electronic equipment, and patents of value to the development of the country's technology.

What foodstuffs from East Europe or the Soviet Union have you seen at your supermarket or delicatessen?

Trends in farm size

Today in most communist countries, large collective farms or even larger farms, owned and operated by the state, cover almost all the farming land. Refer to table 7C.3. Australian farms are often considered large—but are the Soviet ones bigger? (See also the final section of this unit.)

In the last few years, Soviet and East European planners have made these farms even larger, by joining several together. This, they hope, will allow better use of machinery and technical staff, and more efficient organisation. Look at table 7C.4, showing what has happened to the numbers of Soviet collectives since the 1920s, when the movement started. Describe the changes that have taken place.

Table 7C.3

Australian farms	*Average area (hectares)*
Sugar cane farms, Q.	35
Dairy farm, Vic.	65
Wheat-sheep zone, N.S.W.	600
Dry pastoral zone	20 000
Communist farms	
Hungarian collectives	1 000
Romanian collectives	1 900
Romanian state farms	6 000
Soviet grain state farms	38 500
Soviet sheep state farms	100 000

Table 7C.4: Numbers of Soviet collectives, 1928–66

1928	1932	1940	1950	1960	1966
33 000	210 000	235 000	121 000	53 000	37 000

In the meantime, the number of state farms has increased from 1407 in 1928 to 14 000 in 1970; they also have increased in size.

Even in tiny Albania, as a result of mergers, the country's number of farms has fallen from 1200 in 1967 to 500 in 1970; here a typical collective now usually includes four or five villages in its 800–1000 hectares of land. Because of their size, these farms should be more efficient, but a shortage of equipment, specialists, seed, or pedigreed livestock often prevents this. Some of the better collectives have developed processing plants for meat, fruit and grapes.

One of the aims of these changes has been to run the land as an industry. In what way does figure 7C.7 on page 150 remind you of an industry?

Now look at table 7C.5 on page 148. Czechoslovakia and East Germany are the most *industrial* countries of East Europe: does this show in the amount of fertiliser they use? Refer back to table 7C.1—does it show in their yields? Which countries still need to increase greatly their use of fertilisers, and their grain yields? Apart from fertiliser, what other goods can industry make that would raise farm production?

How do the two non-communist countries, with their traditional agriculture, rate in the use of fertiliser? in their grain yields? Does this mean collectives are *essential* for all improvements, or not?

Table 7C.5: Fertiliser used per hectare of farmland

Poland	82 kg
East Germany	260 kg
Czechoslovakia	153 kg
Hungary	65 kg
Romania	25 kg
Bulgaria	79 kg
Yugoslavia	55 kg
Albania	15 kg
Soviet Union	25 kg
West Germany	219 kg
Italy	68 kg

Mechanisation

Collective fields are well suited to the extensive use of machinery; you can see why from figure 7C.9 on page 151. Some farms and crops are highly mechanised, but there is often not enough money or machinery to replace large amounts of hand labour. Look at figure 7C.3: these people are hand-weeding with simple tools. They could be replaced by a machine and be free for other jobs on the collective or in cities.

The situation is improving. Look at the number of tractors in use in Hungary:

1950—one tractor for every 417 hectares;

1959—one tractor for every 73 hectares.

Even so, animals are commonly found alongside tractors, and are widely used for transport, as in figure 7C.4.

There is still a long way to go! In 1968, more than a third of the Soviet potato crop on collectives was picked by hand, and some three million tonnes were lost the next year because there was no machinery or transport available. Again in the Soviet Union, only 25 per cent of collectives and about half the state farms have their own machine repair shops—a big hindrance to efficient use of machinery. In the Virgin Lands (see Unit E), transport problems at harvest time are so acute that some 600 000 lorries and thousands of harvesters are brought in from other parts of the Soviet Union. If the government paid the collectives higher prices for farm produce, or invested more in the state farms, farming would become more prosperous, but the national budget usually gives preference to industrial development.

Other problems in agriculture

> The fine natural pastures of Kirgizia are being ruined. Part of the trouble lies in the increase in the number of sheep, now more than 10 million. Indiscriminate overgrazing, which is turning meadows into barren steppes where only thorns and inedible grasses grow, is also responsible. Inedible grasses have increased to 36 per cent of the area in Chu *raion*. Before *Pravda* drew attention to this situation three years ago there was some improvement but, although the very high returns from cultivated pasture and the application of fertilisers has been demonstrated, the collectives are still reluctant to spend money on improving their pastures. In At-Bashi *raion* not a single kopek was spent in 1968 and 1969, and in 1969, in the Republic as a whole, mineral fertiliser was applied to only 14 000 hectares instead of the planned 55 000 hectares of pasture. A scientific grazing system was finally worked out five to six years ago and detailed schemes assigned to 211 farms. But not one of the schemes has been applied, since they do not promise the farms any increase in their flocks. . . .
>
> Small fenced enclosures will treble the capacity of pastures, but it will be ten to twelve years before a new system can be proved right. In the meantime, the enormous quantities of sheep dung lying around should be used as fertiliser.
>
> *Pravda*, 6 March 1970

Pravda is the major newspaper of the Soviet Union. That such a report should be printed tells you something about the government's concern with agriculture. It also shows you that some forms of criticism are permitted in the Soviet Union.

How does *Pravda* explain that some pastures in the Kirgizia Republic had declined in value? Who do you think is probably most responsible for not improving these pastures?

Which methods does *Pravda* suggest to improve pastures? Which of these methods would be the quickest?

Now read this report from *Voprosy Ekonomiki:*

> 1970 production of herbicides and pesticides was planned at 8–900 000 tonnes, but actual production in 1969 was 345 000 tonnes; the new 1972 target is 523 000 tonnes, while annual requirements amount to about 2 000 000 tonnes.
>
> The production of phosphates only meets about 7–8 per cent of the estimated need. Even at present there are severe shortages of technicians in agriculture, particularly electricians, of whom 300 000 are needed.

Does this in any way change your answer to the question of who was most responsible for not improving the pastures mentioned in *Pravda?* What overall effect will this situation have on the amount of wheat, rye, milk, wool and meat produced?

Future policy

The 'future' exists now in some parts of the Soviet Union and East Europe: the collective farm in figure 7C.5 is an example. This is especially the case on the best-managed state farms, which receive the latest machinery and a greater share of specialists, fertilisers and new seeds. In this

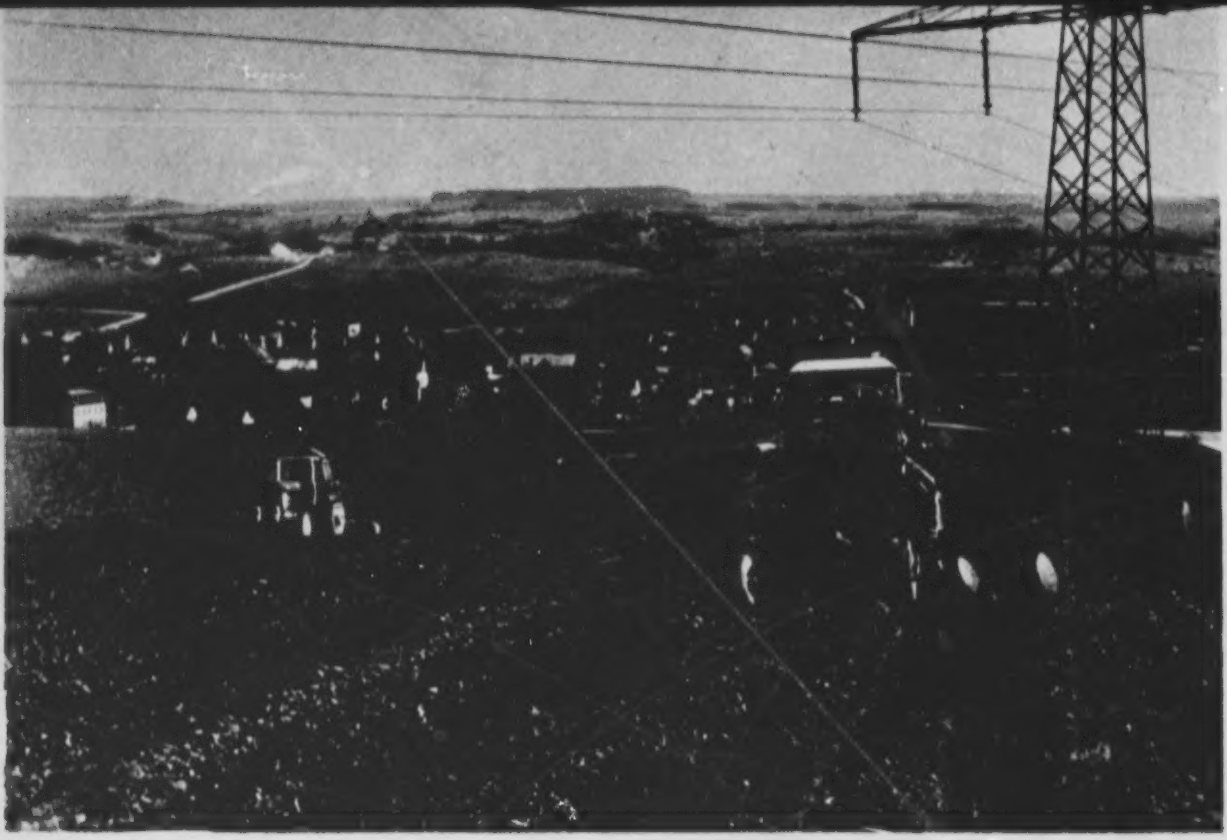


Figure 7C.5: Part of a collective farm in East Germany

way, state farms become examples of the future of communist agriculture.

In most years the Soviet Union can feed itself, but the majority of East European countries are importers of grains. They have no large 'virgin' lands, so how could they increase wheat production? These countries are now finding it more profitable to concentrate on specialist crops such as tobacco, fruit, vegetables (as in Bulgaria), maize, cotton, flax and vines, and to buy from other countries the food they do not grow.

In the 1970s and 1980s, the aim will be to get the maximum profit from farms by a greater use of machinery, fertilisers and scientific methods in growing crops and raising livestock. In a sense, communist leaders aim to *'industrialise the countryside'* with factory-style efficiency and production. Scenes such as that in figure 7C.5 will become more common. Suggest the changes that might have occurred at the places in figures 7C.3 and 7C.4 if the photographs were taken in ten years time.

Now look at the future plans and predictions in table 7C.6 and figure 7C.6.

What will be the effect on the amount of wheat produced when 'high-yield wheat seeds' reach the farms? Which equipment or materials to be supplied to Soviet farms will help solve the problems mentioned in the previous section?

Table 7C.6

New equipment for Soviet farms in the 1971–75 Plan

1 700 000	tractors
540 000	combine harvesters
1 100 000	vehicles
72 000 000	tonnes of fertiliser in 1975 (42 million tonnes in 1970)
high-yield wheat seeds	

Czechoslovak farmers

		private farmers
1970	505 100	19 000
1980	472 100	11 500

Look at the amount the Hungarian government is spending on agriculture between 1971 and 1975. Which developments are receiving more money? If the amounts of money spent on agriculture and industry were reversed, what improvements might there be in agriculture?

Without developing industry, what problems would countries have in modernising agriculture? The list of items in the 'new equipment' table should give you some clues.

What is happening to the number of farmers working in agriculture? From your industry study in Unit B, you should be able to suggest what the 'surplus' farmers can do—remember what was

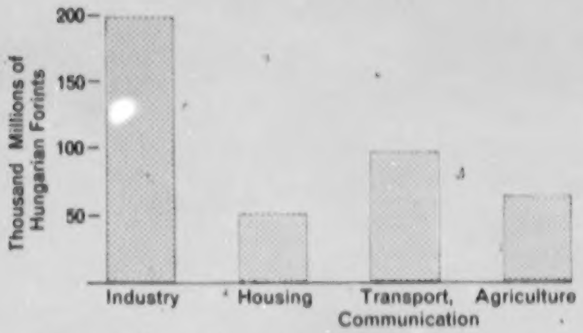


Figure 7C.6: Spending for Hungary's 1971–75 plan

happening to the area around Dunaujváros in Hungary and many other sites in these countries.

Many people have left farming, and there will be more to go: check table 7D.1 on page 156. Perhaps, in the future, the proportion of East Europeans living in cities will be as high as that in Australia today. This movement away from the land has often left mainly older people on the collectives: what problems do you think this can create there? In Russia, other agricultural workers have moved to new farms opened up on the Virgin Lands, but these areas cannot always receive 'surplus' farmers.

Does the table of new equipment plans give you any indication of why it will be possible for more people to leave the land?

A collective farm

Figures 7C.7–7C.10 and 7C.12 show some aspects of the *Sovetskaya Rossiya* ('Soviet Russia') collective farm in the Ukraine, one of the most important agricultural and industrial areas of the Soviet Union.

Over 3800 farmers from 2413 families live and work on this collective, which covers 21 635 hectares. The controlling centre of the entire collective is shown in figure 7C.7, with Mr I. Garmash, who is a Hero of Socialist Labour, at its head.

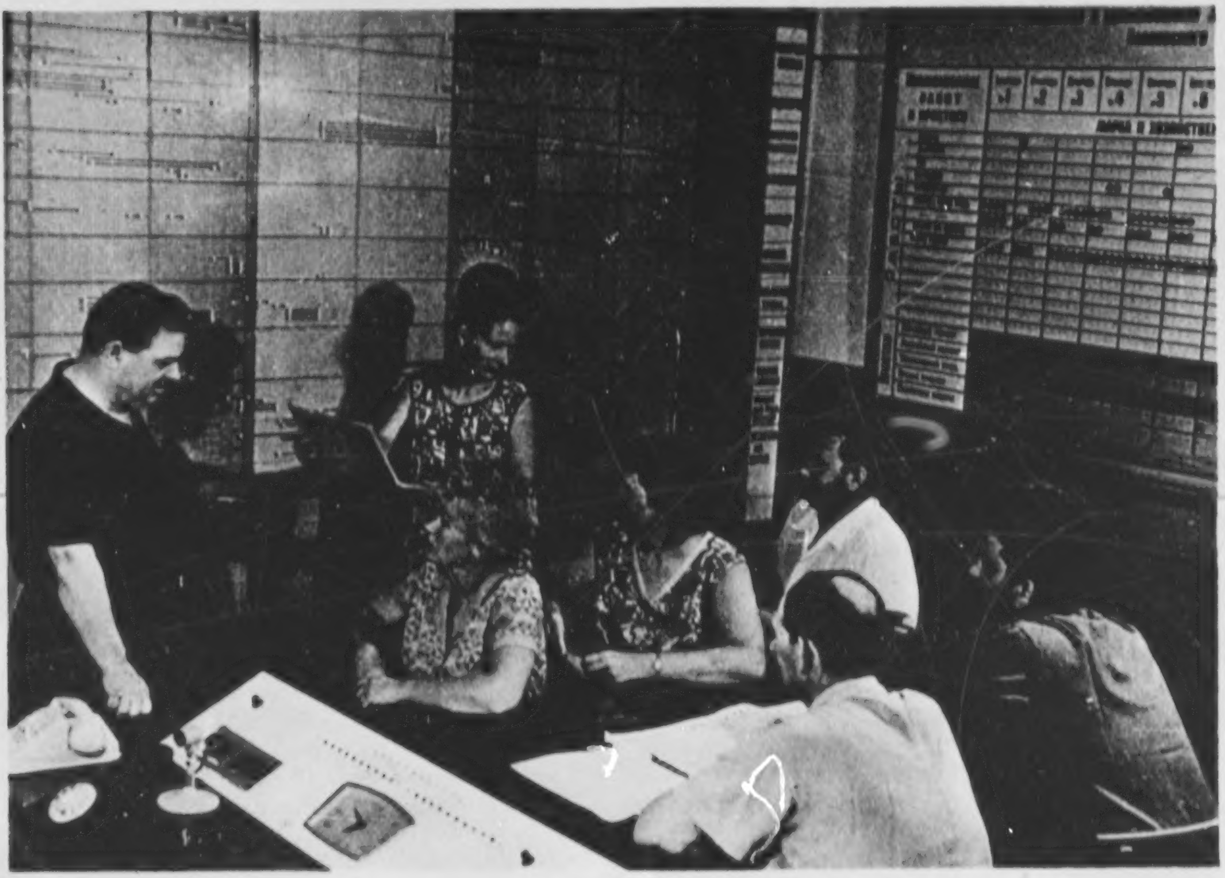


Figure 7C.7

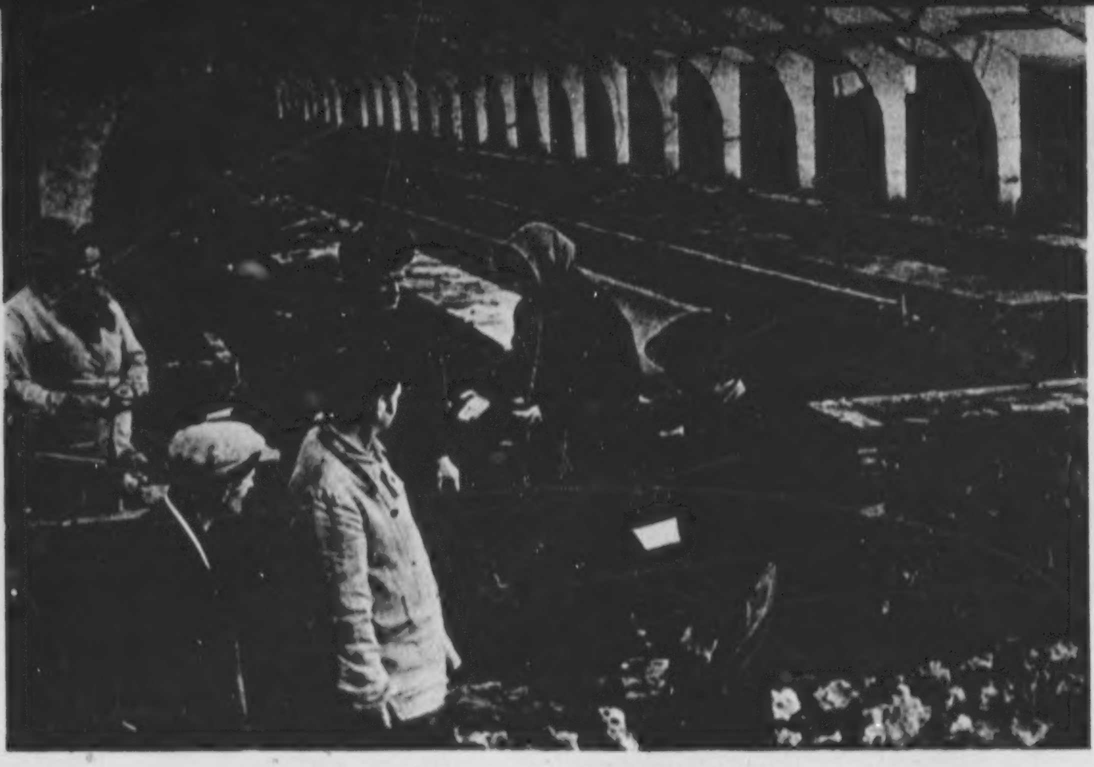


*Figure 7C.8: The new pigsty of **Sovetskaya Rossiya***

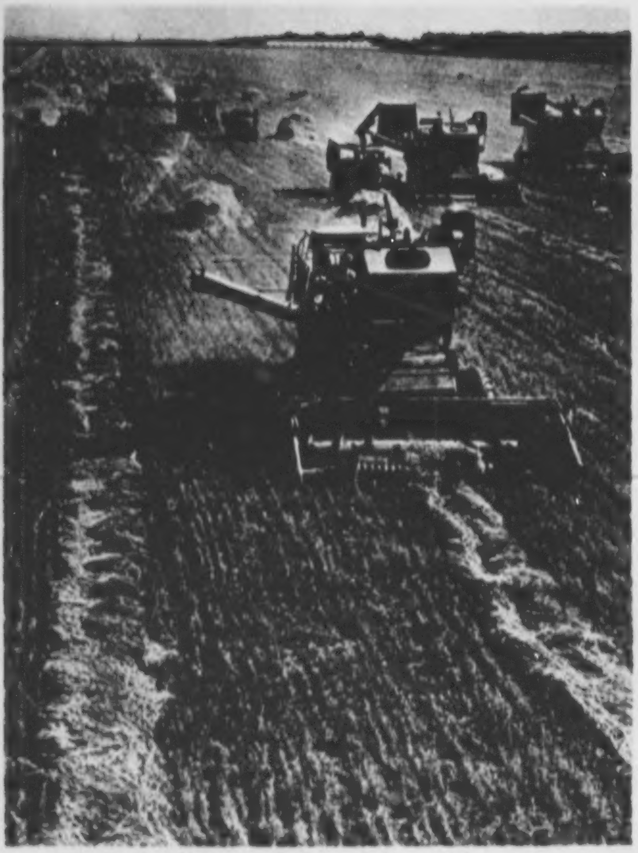


Figure 7C.9: Harvesting wheat on the collective

There are now fewer people working the land of *Sovetskaya Rossiya* than in the past (see the end of the previous section). Estimate the number of farmers per hectare working the collective. Do you think this is a lot, or few? With that number of farmers, would you think of the collective as being *extensively* farmed or *intensively* farmed?

Something in figures 7C.7 and 7C.8 should tell you how it is possible to have 3800 farmers from only 2413 families!

How can you tell from figure 7C.7 that this collective is highly organised? Why would such careful organisation be necessary on collectives of this size? Do you think large Australian farms are ever organised to such an extent?

When small holdings were joined together into collective farms, peasants could only keep a few animals—usually a cow for milk, some pigs and poultry. Most of their animals went to make up new collective farm herds. Today, on the *Sovetskaya Rossiya* collective, for instance, these herds have been greatly improved and enlarged—there are about 6000 cattle, 8000 pigs, 18 000 fine-fleeced sheep (with merino breeding), and 35 000 poultry.

Before the collective era, animals were kept next to the peasants' houses. In figure 7C.11, pick out the new buildings that now house the large farm herds. To which part of the village could these buildings be added in figure 7C.5? Why couldn't these herds be kept outside all year, as animals in Australia usually are?

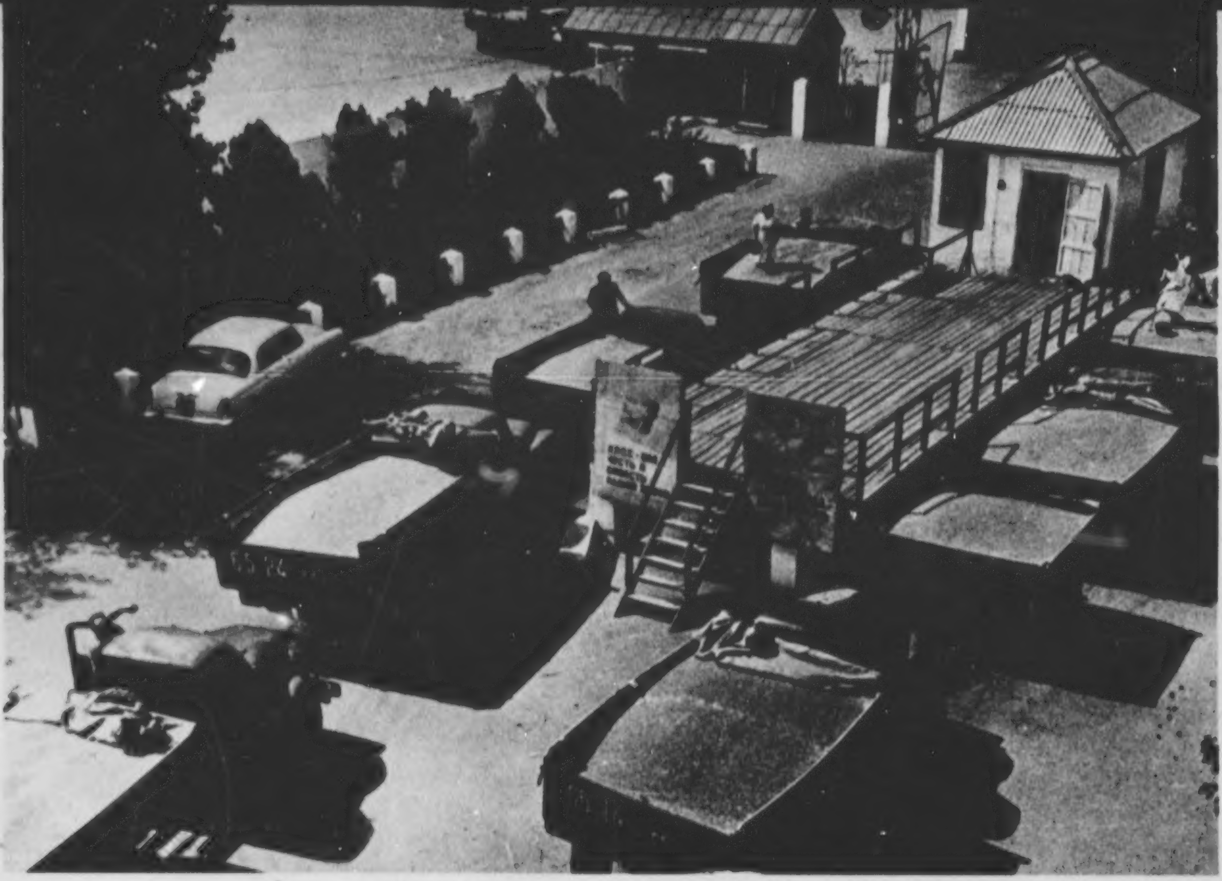


Figure 7C.10: Transporting the harvested grain

Figure 7C.8 shows the construction of a new pigsty on *Sovetskaya Rossiya* collective. What advantages do you think that closely regulated raising of animals would produce? Why would it have been unlikely for a farmer and his family in pre-communist times to use such a production method?

In keeping such large numbers of animals, would the collective have to make any changes in the types of crops it grows?

This collective is largely mechanised, with 200 tractors, 74 grain combine-harvesters, and 100 lorries. Look at figures 7C.9 and 7C.11: in what way are the land and the size of the fields for crops suitable for large machinery, whereas the same features in figures 7C.1 and 7C.2 are not? Where did you find that the fields had been enlarged, but not enough machinery was available? From the 'Future policy' section (page 148), what evidence was there that this situation is improving? In which parts of Australia might similar scenes to those of figures 7C.9 and 7C.10 be found?

Figure 7C.12 shows the 'general store' on *Sovetskaya Rossiya*. Soviet planners are trying to break down the differences between city and country life: providing a wide range of modern goods in country shops is one way of doing this. On large collectives and new state farms, supermarkets,

Figure 7C.11: New buildings for livestock on a Hungarian state farm

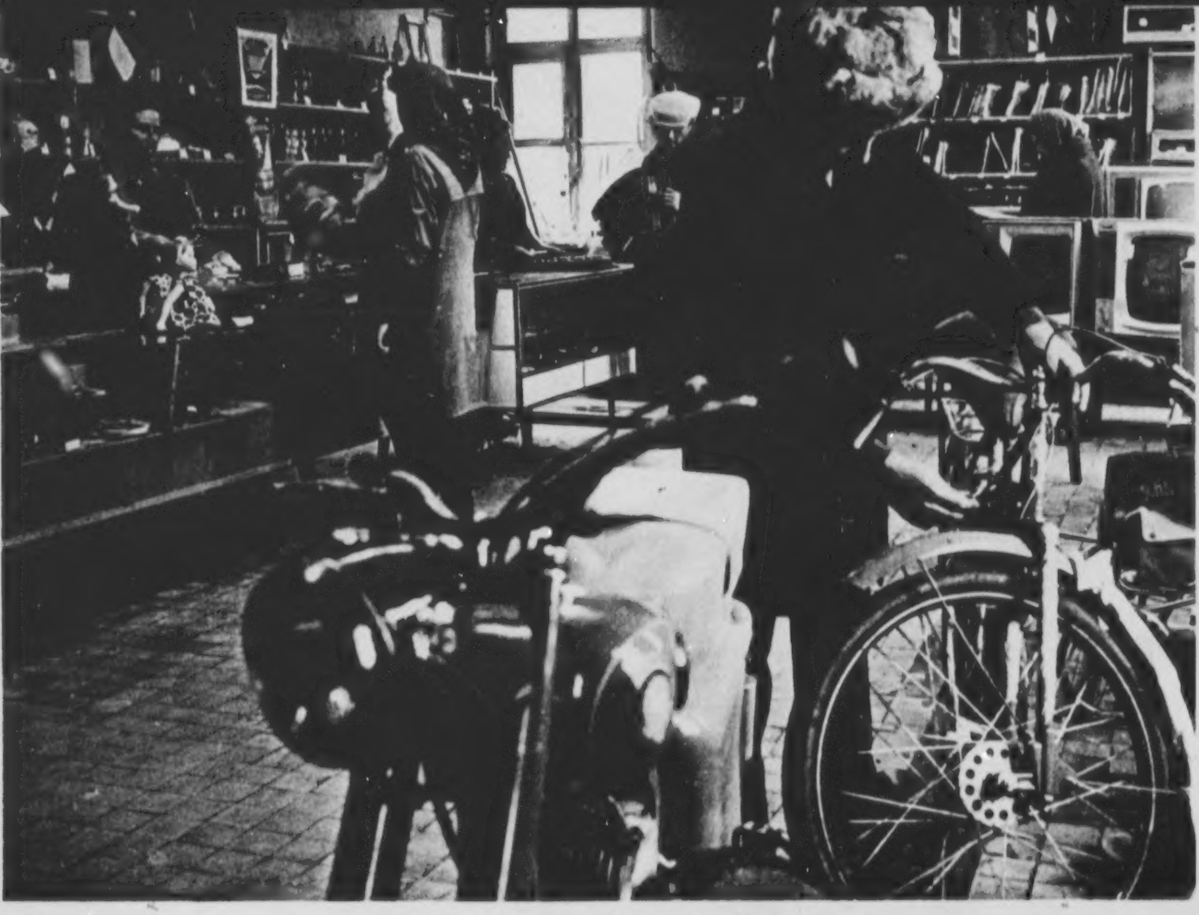
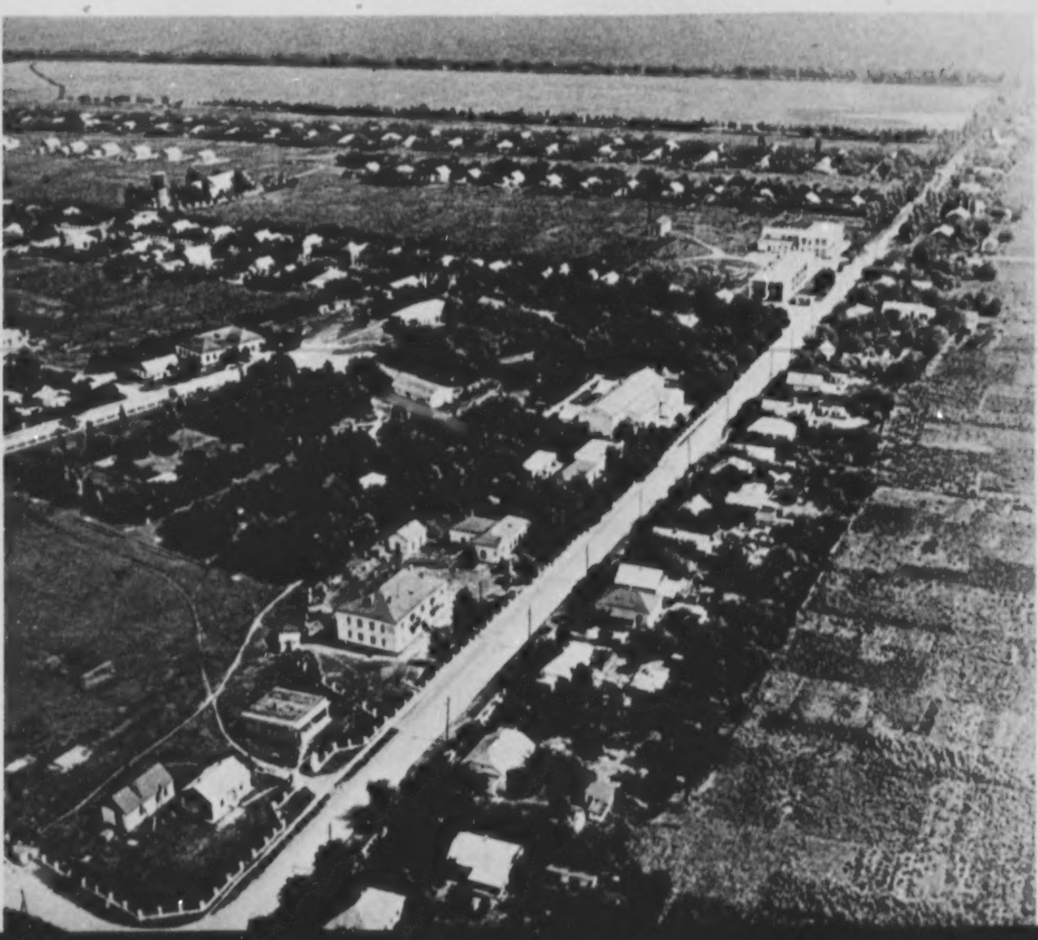


Figure 7C.12: The 'general store' on **Sovetskaya Rossiya**

Figure 7C.13: Rastsvet collective farm village



laundromats and tea houses have recently appeared, along with the established House of Culture, administration buildings, canteens, schools, kindergarten and hospital.

To buy goods, peasants receive money according to the number of days they have worked, and the importance of this work; they also receive bonuses when the collective produces above the quotas that have been set. There are over a hundred different bonuses a farmer can earn to boost his income. On state farms there are wage rates—just as in city factories—but again there is the chance to earn bonuses. Wages are generally less than in industry, but can you suggest how country people would help to balance this? How would bonus payments help raise farm production?

Collective buildings and farm houses may be built around villages such as the one in figure 7C.5, or they may be completely new centres for the reorganised farmlands. In figure 7C.13 is part of Rastsvet village in the Odessa region of the Soviet Union—it has been rebuilt completely, which tells something of the area's prosperity.

You should be able to pick out

peasants' houses with trees and garden plots;
collective buildings needed to run the farm;
two of the enlarged fields with their windbreaks.

Farming in the backyard

Figure 7C.14 shows some household plots on a collective farm in southern Czechoslovakia: they look a little like very large Australian suburban backyards without fences! To their owners, they are much more important than mere backyards. Look at how much of the average Hungarian farmer's income comes from selling corn, fruit, pigs, poultry and milk produced from these plots:

	From private plots	*Collective work*
For 1968, a total of 28 997 forints ($A620)	45 per cent	55 per cent

In figure 7C.14 you should be able to pick out the fruit trees and a small poultry shed, as well as the divisions between the plots. Those in figure

Figure 7C.14: Household farming plots in Czechoslovakia

7C.13 were more carefully laid out when the village was rebuilt. Why would farmers prefer to organise these plots so close to their houses?

Sizes of plots vary, but in most countries a family must work and sell for themselves from a plot less than one hectare in area. Otherwise, they would be putting more work into their plot than they would be doing on the collective. If the family moves out of the collective, they also lose their right to work this valuable plot.

These plots, of course, supply the collective farmer and his family with a lot of their food. But the total amount they sell at a market or to government agencies is also very important. For Hungary, the figures are similar to the situation in the other countries. In 1968 the household plots had

48% of Hungary's total cattle and cows
36% of hogs
75% of poultry
37% of milk
65% of vineyards
55% of orchards

all from small plots that make up less than 10 per cent of the farming land of Hungary.

Leaders of communist countries have often hoped that these plots could be done away with, since they are too much like private farms. But obviously their value to the total food supply and the peasants' living standards will keep them in existence for many years.

Comparing the Australian landscape

Australian farms, just like those in the Soviet Union and East Europe, show great variety in their size, types of product and organisation. But in the Soviet Union and East Europe a distinctive farming landscape has emerged because of communism.

One different feature was the size of farms: what did you discover here? Where in Australia would you find farms as large as *Sovetskaya Rossiya* collective? Why have the communist farms been made bigger as part of government policy?

Other distinctive features are the ownership (who owns the Australian farms—government, the farm workers, or someone else?); the number of families who live and work on the farms; how the workers are paid; and the household plots. For instance, are there any farms in Australia with more than one family living and working on them? Are there any farms with as many as 2000 families, like the *Sovetskaya Rossiya* collective? What things in figure 7C.10 would definitely *not* be seen in Australian wheat or other farming areas?

Using the information provided on farming in the Esperance district of Western Australia (Study 4), outline the changes that would have to be made in administration, buildings, paddock boundaries, etc., if this farming area was 'collectivised'. Would the situation be significantly different for farms in the Ord River irrigation area (Study 3)?

Unit D: Living in communist cities

> The power to command and concentrate their resources brought the Soviets economies of scale. . . . because they could decree that all urban housing should take the form of multistory apartment buildings and because all the contractors were state agencies, Soviet construction officials found it relatively easy to mechanize the heretofore piecemeal or custom approach to housing construction. Throughout the country, workshops were set up to build and assemble apartment components into prefabricated sections. These prefabricated sections were then transported and installed by specially designed equipment that could pay for itself only because it would be continuously used in one state-housing project after another.
>
> M. I. Goldman, 'The Soviet Dual Economy', *Current History*, October 1970

IS IT DIFFERENT?

Rapid urban growth

Many people of East Europe and the Soviet Union are living in cities for the first time in their lives. In figure 7D.1, what tells you that this woman in Budapest is not a 'city type'? What contrasts can you see between her and the way of life represented in the department store she is passing? From your work in the last two units, you should know why this type of person comes to the cities.

Where you live, are there many new arrivals? Have they come from the countryside or from overseas? Do they stand out in any way as being newcomers? Are there any reasons for them not being quickly assimilated into the life around them? Can you think of any goods and ideas that newcomers may have helped to bring into Australia?

Look at table 7D.1: are relatively more people living in cities in Australia than in the communist countries? Which communist countries still have a large percentage of their people living in the country? Can you suggest what will encourage more people like the woman above to move to cities?

If you don't live in a city or big town, can you think of a reason why you or some of your friends

Figure 7D.1

Table 7D.1: Urban population

Country	Percentage living in cities 1940	1971	Total population in millions, 1971
Albania	15	34	2·0
Bulgaria	22	49	8·6
Czechoslovakia	44	62	14·5
East Germany	n.a.	73	17·0
Hungary	36	45	10·3
Poland	30	52	32·8
Romania	23	42	20·4
Yugoslavia	21	42	20·5
Soviet Union	33	56	241·7
China	n.a.	32	825·0
Australia	75	86	12·9

might want to move to the city? If you are a city or town dweller, what might encourage you to move out to the countryside?

This influx of people to the cities has caused a very large housing shortage in all cities in communist countries. The priority given to industrial development has meant that the government has not built enough flats to satisfy the demand. The townscapes show many new housing estates, but many people still live in old, cramped, dilapidated flats, often without a private bathroom or toilet. No person is permitted to have more than a set number of square metres of floorspace as living area, and the waiting lists for the newly built flats are long.

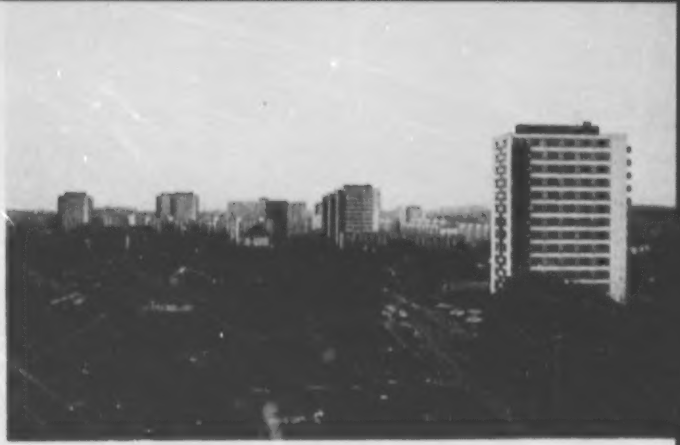


Figure 7D.2: New high-rise housing in the Prague suburb of Zahradni Město ('Garden Town')

DŮNZ PRAHA 8.

Figure 7D.3: May Day in Wenceslaus Square, Prague

Let us now consider some of these new housing projects. . .

The suburb shown in figure 7D.2 is found near the edge of Prague. How is the housing different near the edge of your town or city? Are there any new high-rise housing blocks in your city? If so, in what part of the city are they found, and do you know why they were built there?

In communist and all European cities, living in flats is very common: would you prefer to live this way, or in individual houses with separate gardens? Are there any advantages to life in flats?

If the flats of figure 7D.2 were in Budapest or Sofia, how much would the tenants be paying each month? (Check table 7D.2 on page 159.) Do you think this is expensive or cheap? Before

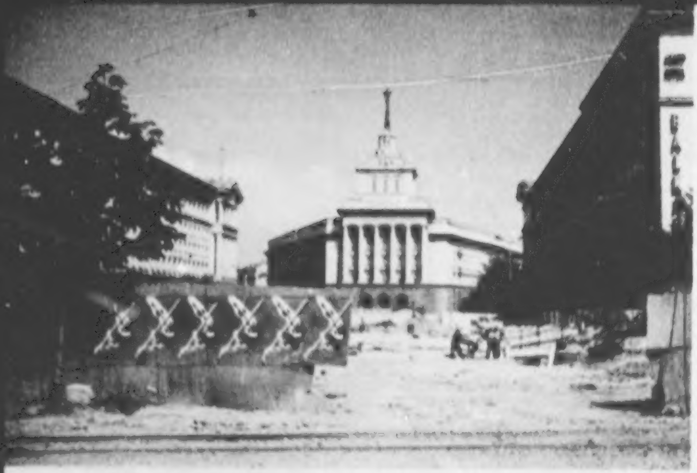


Figure 7D.4: Communist Party headquarters in central Sofia

you answer, look at how much the tenants could be earning.

In these blocks, which are common in all East European and Soviet cities, workers in factories have the same size flats and pay the same rent as professional people such as doctors.* Does this happen in your suburb or town area, or are there 'zones'? Are there differences in the quality of housing, shops and other amenities between these zones?

What are the major differences in the two types of buildings of Zahradni Město? Obviously, the suburb's population has increased a lot: suggest what effect this would have on local roads and shops. What would planners need to do to correct this? Can you find anything in the photograph that still suggests why the suburb was originally called a 'garden town'?

Finally, is there any similarity with the landscape shown in figure 7B.3 (page 140)? Can you think of why this should be so?

Special functions

Once 1 May in each year was a day of celebration for the start of summer in Europe. But in all communist countries and in many Western ones, it has now become a national day honouring workers. Great parades of people organised from factories and offices march along the city streets, and the national leaders usually make speeches about the progress and future plans of their country.

Is there anything in figure 7D.3 that indicates to you that the day is a *national* day? a *political* day? an *international* day? Why do you think 'workers' are honoured in these countries?

Are there celebrations in your town that bring out into the streets more than three-quarters of the population? Are there any large-scale national parades in Australia, and if so, on what occasions? Is May Day celebrated in any way where you live?

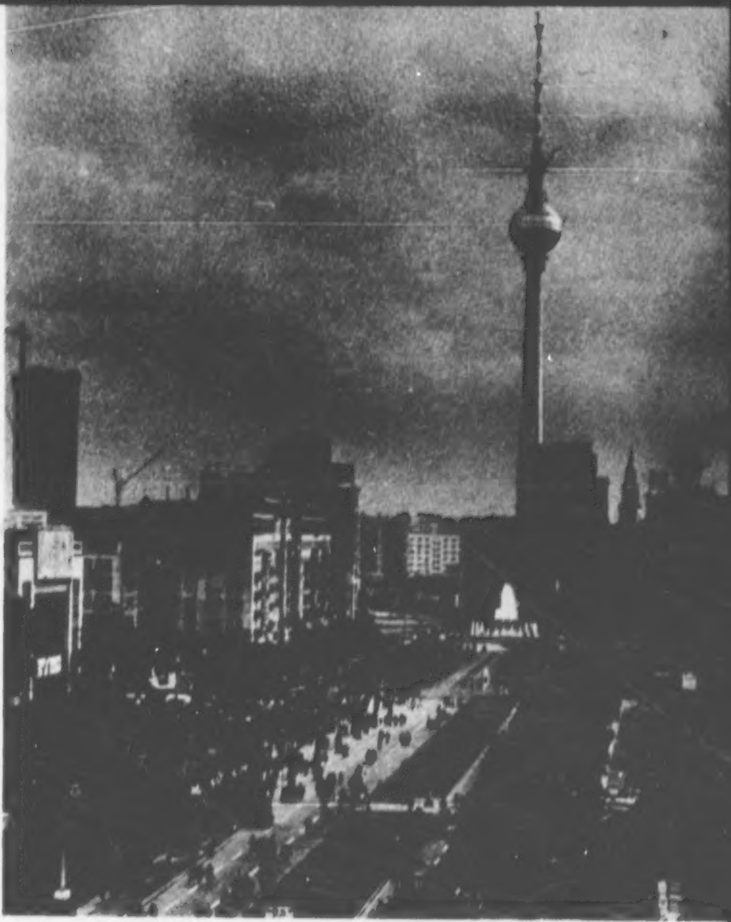
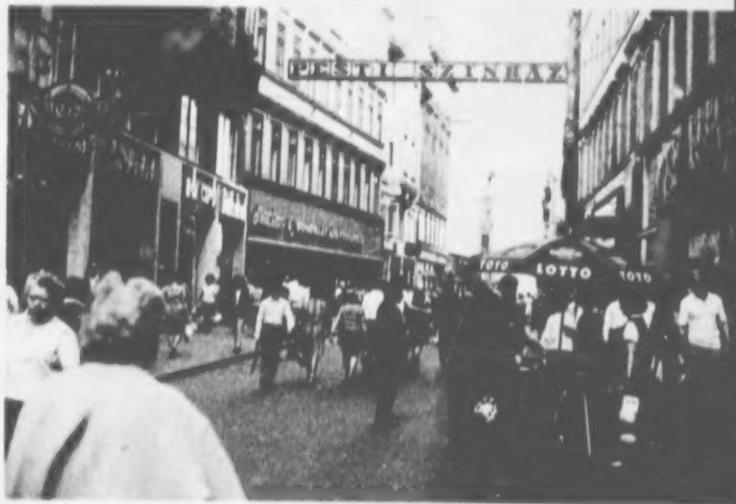


Figure 7D.5: Karl Marx Allee and TV tower in East Berlin. Traffic usually occupies this street, but on 7 October people use it to celebrate the anniversary of East Germany's foundation in 1949

Figure 7D.6: Vaci Ucca, a shopping area in the centre of Budapest



---

* Some privately financed building is now permitted, and it is here that the more highly paid Communist Party officials, factory managers and 'top' civil servants can move into distinctive areas of the city.

Special buildings

An old church in the centre of Sofia was demolished to improve access to the Communist Party building shown in figure 7D.4. What can you find on the building to prove that it is a 'party' building? Apart from the demolition of the church, how else has the party headquarters been made to appear more important?

In the major cities of the communist nations, party and government buildings, printing houses, and memorials to certain heroes are given extra importance through their size and setting. Often the streets and squares have been renamed to honour communist heroes and special days in history. Examples are Lenin Körut in Budapest, Marx-Engels Square in Belgrade, 25 Oktober Street in Moscow, and the Marshal Tito Square in Zagreb. (What is the historical significance of these names and the date?)

At the centre of communist cities, there may be memorials and party or government buildings: what is at the centre of your town? After whom are the major streets named, and have any recently been renamed?

War destruction in Europe has often meant that entire areas of cities could be planned anew and rebuilt. In figure 7D.5, can you see any of Berlin's old buildings? How does the appearance of the street tell you that it has been recently planned and built? Compare this street with your own shopping area and the one in figure 7D.6—what differences are there?

Communist architects often design buildings to look impressive and to 'show off' the progress of their country. How have they done this in Berlin?

Shopping in communist cities

The photograph in figure 7D.6 was taken on the same day and within a few minutes walk of the scene in figure 7D.1. What obvious difference can you see between the types of people in the two photographs? Do they appear very different from people to be found in Australian shopping areas?

Vaci Ucca is regarded as an important shopping and meeting place for Budapest people: yet by our standards the range of goods on sale is rather limited. From the details of prices and incomes in table 7D.2, suggest what would be the most expensive goods for these shoppers. From this table, can you see why there has not been the need to have a large number of shops in communist cities? (Refer back to Unit B and the examination of industry for another reason.) How do you know that cars were once allowed to use this street?

Work out a translation for the umbrella advertisement in figure 7D.6 (it is a very popular habit in Budapest, and can help people buy more things!). Also, was the photograph taken on the *Buda* or the *Pest* side of the Danube River?

Where are the main shopping areas in your town? Are there lesser shopping centres near your home, and how do you get there? Looking to figure 7D.8, suggest how people in Moscow would get to the central shops of G.U.M. In newer city areas (for example, at Dunaujváros, page 140, and in the Moscow suburbs in figure 7D.10), how is this done?

The cost of living in cities

In table 7D.2, Sofia and Budapest have been chosen as random examples. Prices and wages vary between the communist countries, but they reflect similar values for certain goods and services. Amounts have been converted to Australian dollars and cents, using free market rates, and averages have been used where a range of prices occurred. Fill in details for your own area, taking care with the metric units, and then answer the questions that follow.

What percentage of the income of workers or doctors goes to pay the rent? How does this compare with the situation in Australia? What difference does a low rent make to the amount of money available to spend on other things?

All the wages and prices for different goods and services in these countries are determined by the government. Are any set by the government in Australia? What do you notice about the prices of imported products? Why do you think the prices of imported goods have been set at this level?

Education and health services are provided at low cost to people in communist countries. How does this help to make everyone 'more equal'? Is the same true in Australia?

In families in most communist countries, the husband and wife usually both work and receive equal wages: how does this help their standard of living? If you wanted to say who was 'better off' —a family in Budapest, in Sofia, or where you live —what other information would you like to have before deciding?

Bus tickets are the same price for any part of the city: does this fully compensate people for not being able to afford a car? How does this help people living on the edge of cities to be as well

Table 7D.2

Item	Budapest ($A)	Sofia ($A)	Your area ($A)
monthly income of doctor	86·00	64·00	
monthly income of worker	60·00	30·12	
month's rent of new two-bedroom flat	6·88	4·30	
3 months' telephone rent	2·15	3·23	
chicken, per half-kilo	·71	·47	
milk, per half-litre	·08	·07	
6 oranges	·66	·27	
6 eggs	·17	·15	
bread, per kilo loaf	·07	·06	
coffee and cake in a café	·22	·08	
cigarettes, 20 filter-tipped	·12	·09	
transistor radio, medium	25·82	14·00	
black-and-white TV, wide-screen	129·00	68·00	
LP record (imported pop music)	4·30	6·45	
LP record (local pressing)	1·29	·83	
cinema ticket (centre stalls)	·18	·07	
daily newspaper	·005	·005	
new Fiat 850	1635·00	1183·00	
petrol, per litre (super-grade)	·09	·06	
bus/train ticket, any distance	·02	·01	
jeans	12·91	6·45	
woollen sweater	10·00	7·50	
cotton shirt	3·50	1·80	
shoes, leather	10·00	5·00	
lipstick	·70	·90	
school fees and books (high school)	3·20	·32	
visit to doctor	·00*	·00	

*An 'honorarium' is generally welcomed by the doctor!

off as people living closer to the centre? Apart from a car, what other items do you think are very expensive?

It will be easier to buy cars in the future. What indication of this is there in table 7B.2 on page 144? Do you think planners will have to alter the cities in any way when there are more cars in use?

MOSCOW—A MAJOR COMMUNIST CITY

We have found that cities in communist countries show some differences from Australian cities. Let us examine one city in detail—Moscow.

The capital and largest city of the Soviet Union, and one of the biggest cities in the world, Moscow had always been important in the history of the Russian empire. The Kremlin, the wall of which is visible in figure 7D.7, was the medieval city centre, and today has become the political centre of the Soviet Union.

Before the Communist Revolution in 1917, Moscow could be described thus:

> ... like the rest of Russia, Moscow shows openly the contrasts between wealth and poverty. The prosperity of industrial growth is evident in her wide boulevards, public squares, and the thousands who can ride in hackney carriages in summer and sleighs in winter. But the same prosperity which has attracted people from all parts of this immense land, seems to force its workers into terrible living quarters. Slums of hovels around the Khitrov Market and along the banks of the Yauza are also the homes of many wrecks and alcoholics. Vodka, at sixpence a half-litre, is their temporary cure for poverty, the cold and, for a time, unhappiness.

After 1917, Moscow became the capital; its appearance has changed, its old importance has been strengthened, and new functions have been added. Throughout, it has continued to grow as the largest city in the Soviet Union.

The most important place in the Soviet Union

Many places in Moscow are important, and they help explain why Moscow itself is so important and so large.

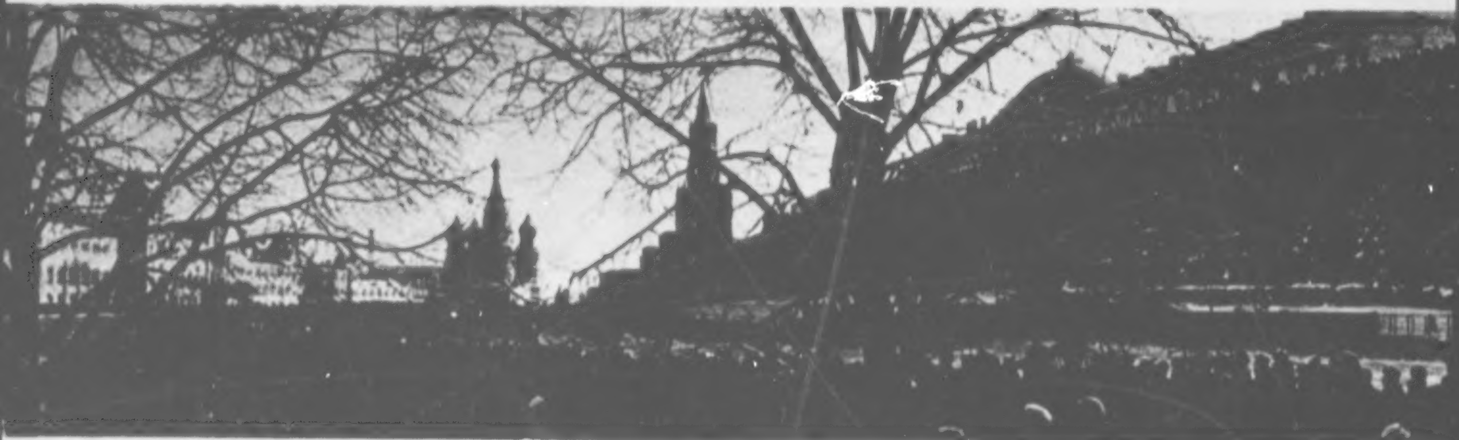


Figure 7D.7: Thousands of people waiting to visit Lenin's tomb in Red Square, Moscow

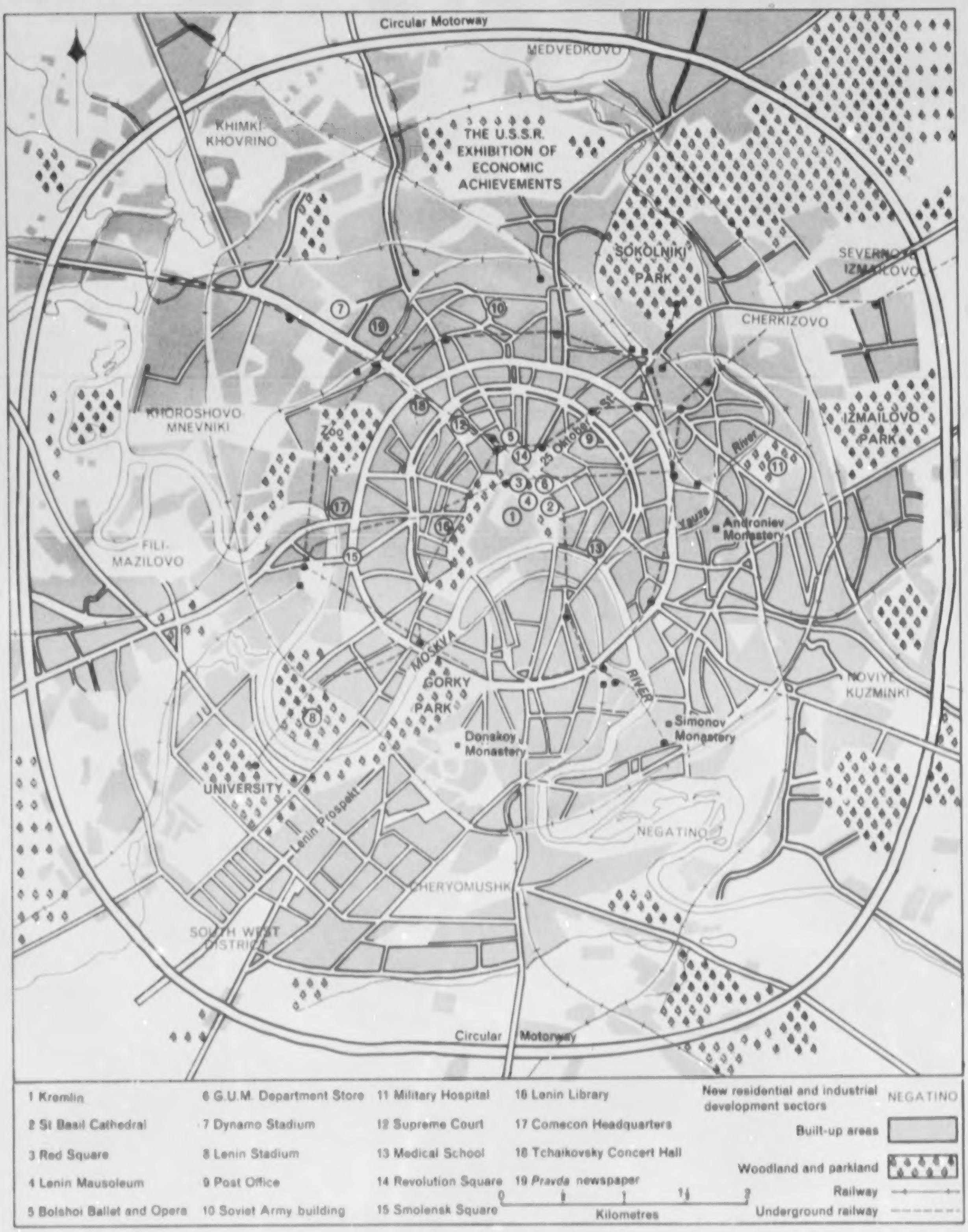

Circular Motorway
MEDVEDKOVO
KHIMKI-KHOVRINO
THE U.S.S.R. EXHIBITION OF ECONOMIC ACHIEVEMENTS
SOKOLNIKI PARK
SEVERNOYE IZMAILOVO
CHERKIZOVO
KHOROSHOVO-MNEVNIKI
Zoo
25 Oktober St.
IZMAILOVO PARK
Yauza
River
Androniev Monastery
FILI-MAZILOVO
MOSKVA
RIVER
GORKY PARK
NOVIYE KUZMINKI
Donskoy Monastery
Simonov Monastery
UNIVERSITY
Lenin Prospekt
NEGATINO
CHERYOMUSHKI
SOUTH WEST DISTRICT
Circular Motorway
1 Kremlin
2 St Basil Cathedral
3 Red Square
4 Lenin Mausoleum
5 Bolshoi Ballet and Opera
6 G.U.M. Department Store
7 Dynamo Stadium
8 Lenin Stadium
9 Post Office
10 Soviet Army building
11 Military Hospital
12 Supreme Court
13 Medical School
14 Revolution Square
15 Smolensk Square
16 Lenin Library
17 Comecon Headquarters
18 Tchaikovsky Concert Hall
19 Pravda newspaper
0 ½ 1 1½ 2
Kilometres
New residential and industrial development sectors NEGATINO
Built-up areas
Woodland and parkland
Railway
Underground railway

Figure 7D.8: Moscow

In fact, you have just come across one place of great significance to the whole of the Soviet Union and the world. Do you remember? Find this place in figure 7D.8. Originally it was the centre of Moscow—is it still at the centre?

Great national events such as space achievements are celebrated in Red Square, with the leaders and heroes assembled around Lenin's tomb. The government organises such rallies to encourage the people to feel united and proud of the achievements of the communist state.

In what other way have communist planners made their capital cities different in the placing of certain buildings? (Check back to figure 7D.4.)

Using figures 7D.7 and 7D.8 again, find another function which some buildings on Red Square have for thousands of Muscovites.

Here is some discovery work for you to do in finding evidence of more of Moscow's important functions. Locate on figure 7D.8:

- the most famous of over thirty Moscow theatres (named after a Russian composer)
- the university, with more than 25 000 students. What other places could make Moscow the major educational centre of the Soviet Union?
- a place that 'shows off' the Soviet Union's development. What was the 'showing off' method that you found in Berlin? (Refer back to figure 7D.5.) Is there any sign of this in figure 7D.10?
- the railway stations which connect with other cities in the Soviet Union. Your atlas and figure 7A.3 will help you to see these connections. Does Moscow's position in the western part of the Soviet Union increase its importance in any way?
- some possible tourist attractions.

Now look at some more of the ways in which Moscow and the other communist cities are different from Australian cities. Unlike Sydney, Melbourne, Canberra and other Australian cities, Moscow has few areas (as yet) made into large car parks. From figure 7D.8, can you suggest a reason? Another reason is given in Unit B, page 142, and by table 7D.2 (page 159).

Using figure 7D.8, make a list of names of streets and places that would not have appeared in Moscow until *after* a communist government had become established.

Moscow has changed

As figure 7D.9 shows, Moscow has grown. What was the city's population when the description of old Moscow (page 159) was written? What is its population now? Plot your city or town's population beside that of the 1970 Moscow column. How many times bigger is Moscow's population than that of your city or town? Try to find details of your city or town's population at ten-yearly intervals since 1900, and compare its growth rate with that of Moscow.

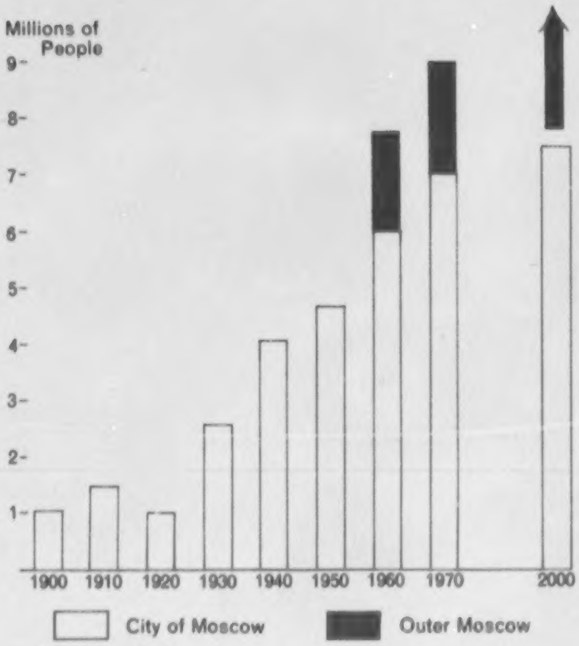


Figure 7D.9: Population figures, Moscow

In the description of old Moscow, find a reason why the city's population could have been growing at this time. During the present communist period, is this still a reason for cities growing? Check with the text referring to figure 7D.1, and that on page 141 (Unit B), or on page 150 (Unit C).

In old Moscow, how were these newcomers housed? Now look to figures 7D.10 and 7D.11 for today's housing. Not only has modern Moscow more people, but many areas in the centre of the city have been redeveloped, and many completely new housing projects have been built.

Moscow is not unique in this. Is there a part of your city or town that has grown old and needs to be rebuilt? Perhaps some parts have already changed—find out the differences in the heights of buildings, and what the area is being used for now.

Figure 7D.11 shows one of Moscow's newer residential and industrial developments. Find its location on figure 7D.8. Looking at the area covered by the buildings, suggest why Negatino needs to be towards the edge of the city. Do other developments in Moscow have similar locations? In what other communist city did you

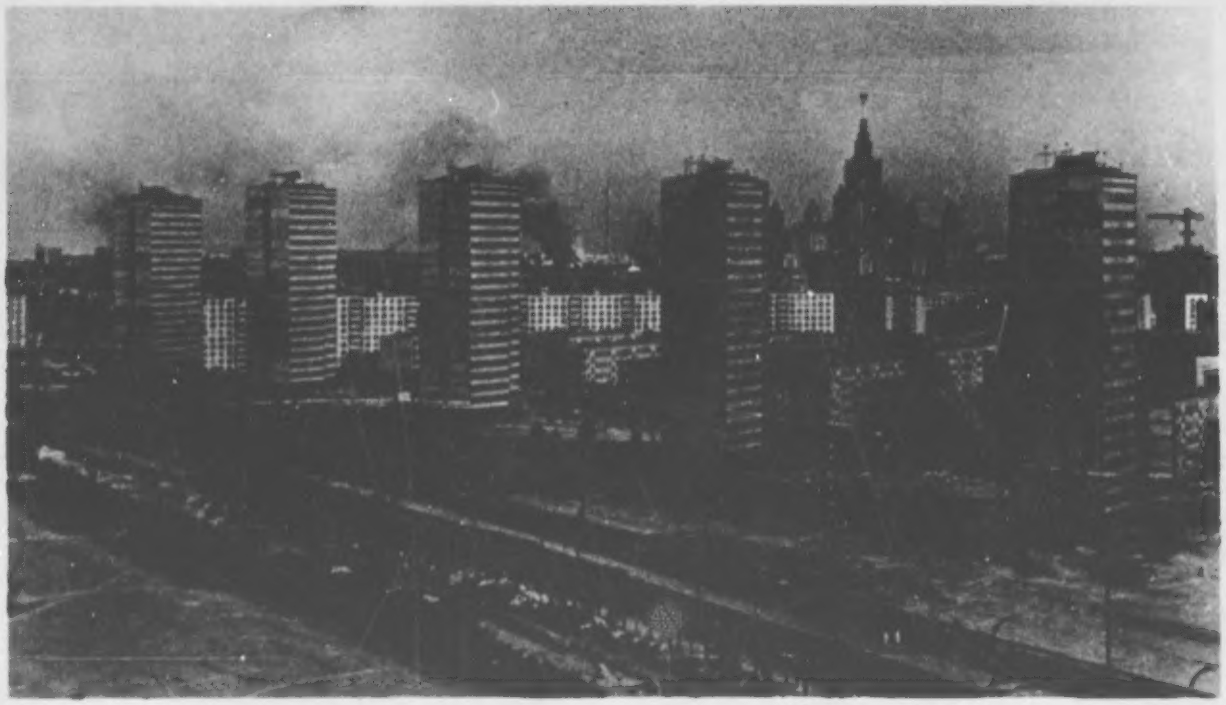
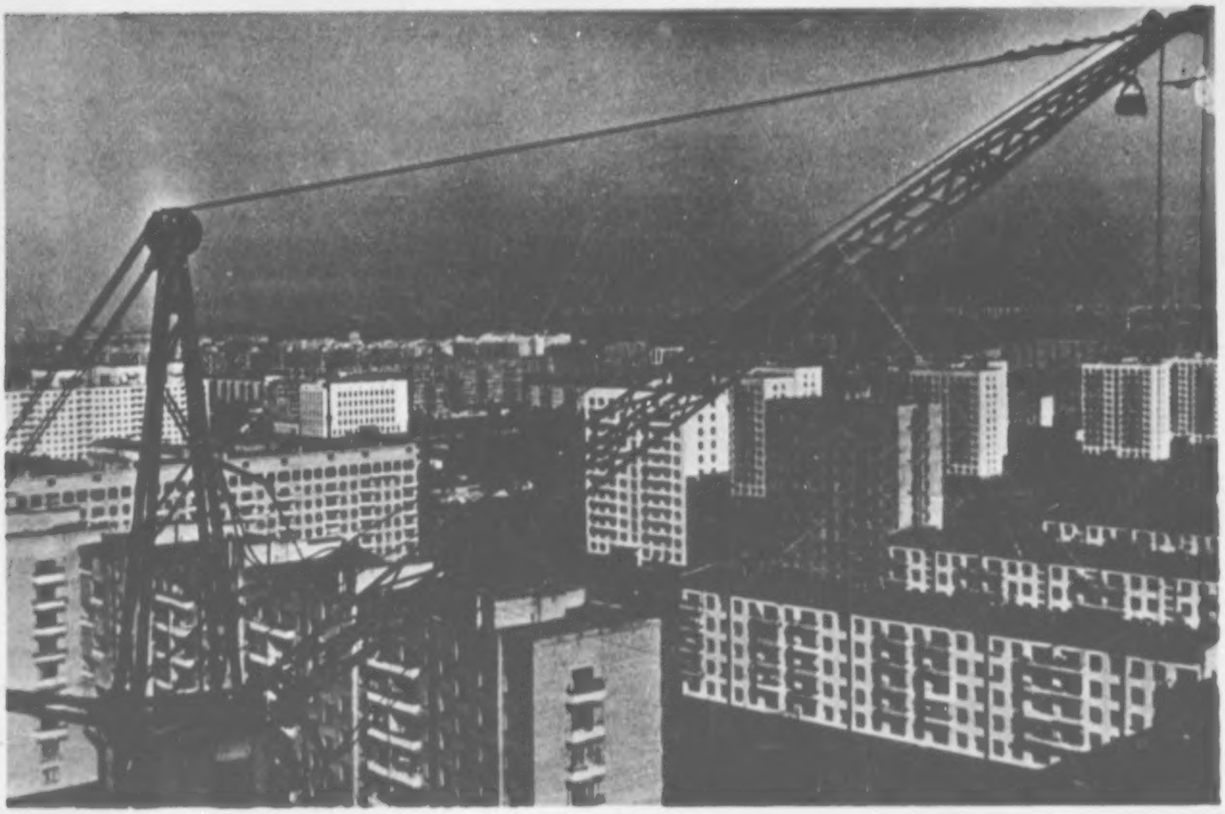


Figure 7D.10: Lenin Prospekt in winter. Minimum temperatures of —30°C are not uncommon, but the summer days can be very hot, too!

Figure 7D.11: New Moscow housing at Negatino



find a similar case? (Refer back to figure 7D.2.) Why do you think it was best to plan for the living and working areas to be located near each other?

Moscow is a great industrial centre of the Soviet Union. Suggest some of the industries which could have developed to serve Moscow's 7 million people.

People have always wanted to come to work, study and live in Moscow. Therefore housing has always been one of the city's great problems. Much has been done: in ten years to 1971, over a million new flats were built in Moscow. Much of this new housing has proved to be badly built, with ill-fitting connections for appliances, poor facilities, and considerable overcrowding. However, newer schemes have tried to eliminate these faults.

In what way does all the housing appear 'equal' in figure 7D.11?

Is there anything about the appearance of the suburb in figure 7D.11 which you would call a fault? Is it better in figure 7D.10?

Would people living in these flats expect their rents to be high, medium, low, or very low?

In this type of housing, what provision would be essential for comfortable living, that was probably not available in old Moscow? (Look carefully at figures 7D.10 and 7D.7.)

The 19-storey blocks on Lenin Prospekt in figure 7D.10 have shops at their base. Why would this be sensible planning? What sort of shops would you want to find there if you lived in these flats?

How big is Moscow?

As the Kremlin is the centre of government in the Soviet Union, the decisions made in its offices affect the whole country. International communist organisations such as COMECON (see Unit E) are also based there. Thus Moscow's influence extends far beyond the borders of Russia.

The boundary of the city of Moscow is regarded as the Circular Motorway (see figure 7D.8). The length of this motorway is 109 kilometres. (Using your atlas, compare this with the distance around Sydney or Melbourne's built-up area.) Beyond the Moscow motorway, is the land mainly built-up or woodland?

Planners have tried to slow down the numbers of people coming to live inside this boundary: does it show at all in figure 7D.9?

Now look at figure 7D.12. This is still Moscow! Find the Circular Motorway boundary on this map.

Are there as many built-up areas outside this boundary as inside? Are they all together, or in a broken pattern?

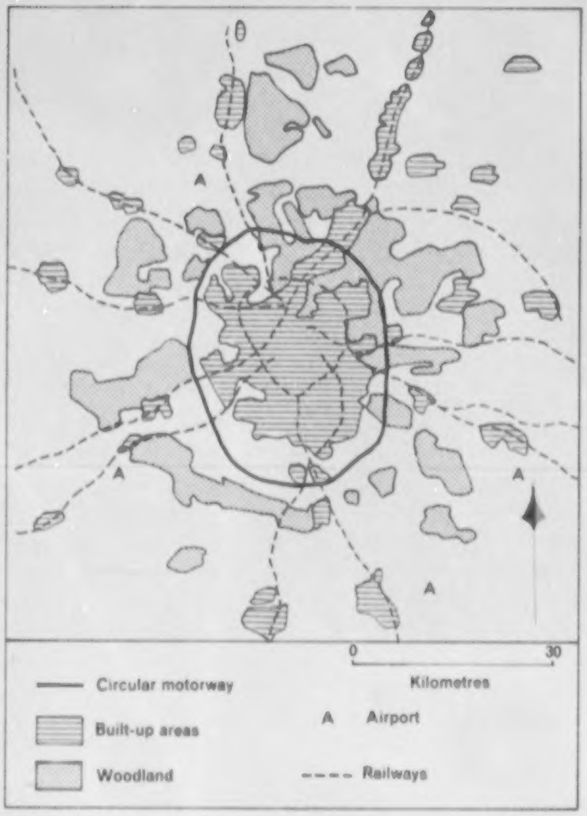


Figure 7D.12

What is the population of this part of Moscow? (Refer to figure 7D.9.)

If the people in outer Moscow wanted to travel in to the centre to work in offices and factories (more than a million do so every day), what form of transport could they use? (Look at figure 7D.12.)

As more people are attracted to Moscow and find work there, its size will grow still further. Planners have tried to develop industry and living areas in the satellite towns shown: why would outer Moscow be best for this expansion?

Not only Moscow

All over the world, large cities are growing. If you live in a town or city, is it expanding? Is this occurring in any particular direction? Are there any attempts by planners and authorities to direct this growth, perhaps stopping it in places and encouraging it in others? Does your centre have its green belt and satellites?

Over 120 million people in the Soviet Union now live in towns and cities, so you can begin to realise the huge job of providing new and improved housing, schools, transport and so on for this population. Remember the description in Unit B of how a new town was built in Hungary to house the workers for a new steel industry. This happened elsewhere in East Europe and the Soviet Union. Over six hundred completely new towns of different sizes have been built in the Soviet Union between 1959 and 1971—and more are planned, alongside mining, power and industrial developments. There are even ambitious designs for enclosed towns in the cold north, with artificial light, special heating, and carefully cultivated plants!

As cities like Leningrad, Kiev, Minsk, Warsaw and Bucharest grow, satellites will be planned as alternatives to crowding the inner parts of the city. Within all these urban places, communist developers try to emphasise an 'equal' standard of life, with equal facilities of shopping, schools, culture and sport.

In Australia, are there any planned new towns based on mining or power developments? In this book we have looked at examples in the Pilbara region of Western Australia (Study 3). Do any of the large Australian cities have satellites? (Refer to the description of Elizabeth in Study 12 of *Man and Space.)*

Unit E: Breaking down the differences

Communist planners have always believed that everyone should have an equal opportunity in life, and that no one area of a nation should be more developed than another—that there should be equal development of all regions. Before Russia and the countries of eastern Europe became communist, there were very big differences between them. Some areas were industrially developed and wealthy—such as Bohemia in Czechoslovakia, and Thuringia in Germany—while much larger areas remained very backward and poorly developed.

Much has been done to change this. Smaller national groups tend to be given special treatment in industrial, agricultural and education programmes. Often these programmes have been carried out even though they have proved to be very costly.

We will look at some attempts to break down these differences:

- modernising an underdeveloped part of the Soviet Union;
- sharing of resources between the communist countries;
- breaking down the economic and cultural differences within Yugoslavia.

Despite the changes that have occurred, when visiting these areas you can still see great differences in the people and the landscape. The Germans in Berlin are still quite distinct from people in Budapest, who in turn are different from those in Belgrade. These differences are caused not only by differences in cultural background, but also by the differences in living standards between the more developed areas and the less developed.

CHANGING AN UNDERDEVELOPED PART OF THE SOVIET UNION

Before the lands which now make up the Soviet Union became communist, there were many underdeveloped areas. Kazakhstan (figure 7E.1), despite its very large size, was regarded as an empty land suited mainly to animal raising, wheat growing, and a little mining. Transport was so backward that camels were used to bring copper ore and oil to rail terminals! At that time, the Kazakhs had no university, only 22 persons had graduated after attending secondary school, and not more than 1 in 50 of the population could read and write!

Over the centuries, Kazakhstan had experienced many invaders—from Alexander the Great's army, Arabs, Genghis Khan and Timur to numerous local tribes. Mainly during the last century, Russian settlers moved in to cultivate the fertile northern Kazakhstan lands. Today, Kazakhstan's population is made up of many different groups of people, as figure 7E.2 shows.

Before the many changes in Soviet times, the Kazakhs had a distinctive nomadic culture, adapted to the plains and animals of the country. They rode horses, living mainly in felt tents called *yurta;* they ate such food as *besbarmak* (boiled mutton or horsemeat with dough pieces), *sorpa* (meat broth), and dried cottage cheeses, drinking *koumiss* (specially fermented mare's milk), and camel's or sheep's milk.

Look at the photographs that follow in this unit, and suggest why the land surface made invasion easy. From figure 7E.1, can you suggest why Russians and Ukrainians would have found this area convenient to move into? How would these newcomers have changed the importance of Kazakh people in this area?

Use your atlas to see from which other countries people could have come to settle the entire southern area of the Soviet Union. Which foreign country now borders Kazakhstan? Is there a natural feature forming this border?

How did Kazakh animals contribute to the

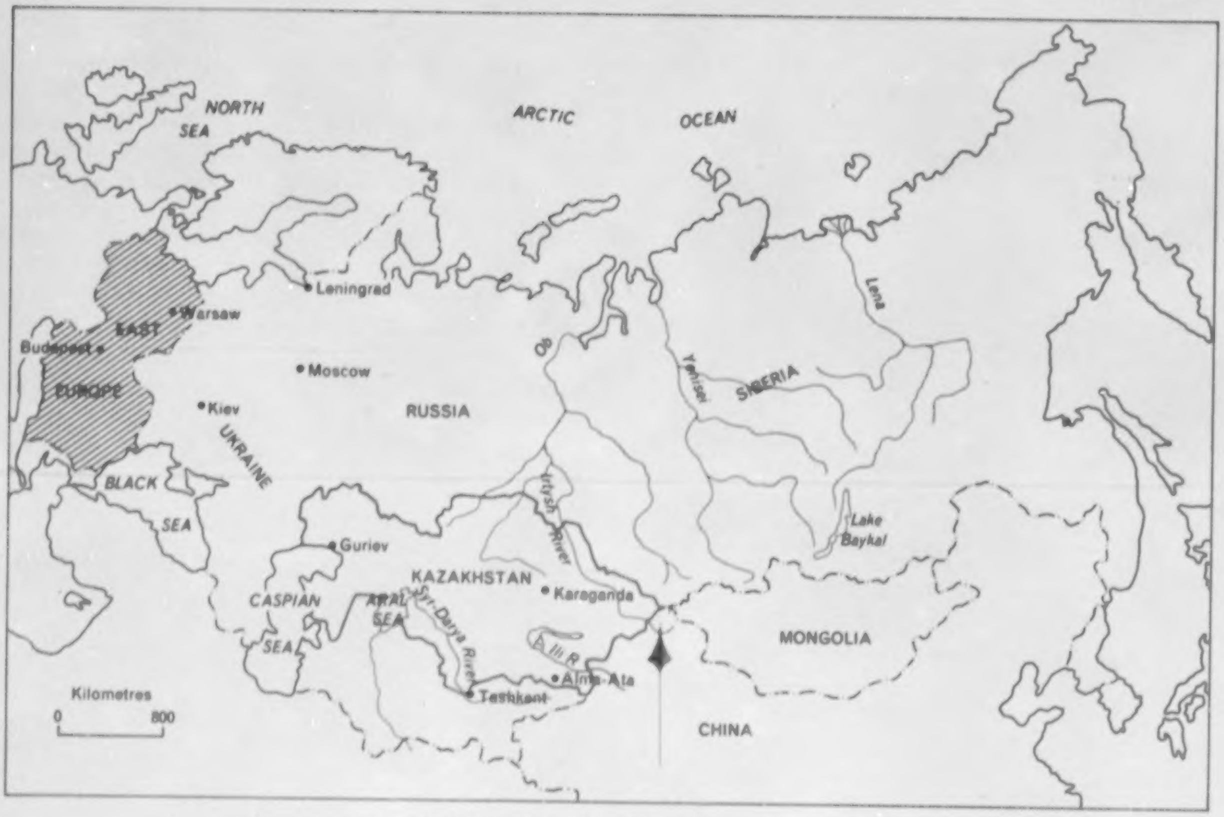

NORTH SEA
ARCTIC
OCEAN
Leningrad
Warsaw
EAST
Budapest
EUROPE
Moscow
Kiev
RUSSIA
UKRAINE
BLACK SEA
Ob
Yenisei
SIBERIA
Lena
Irtysh River
Lake Baykal
Guriev
KAZAKHSTAN
Karaganda
CASPIAN SEA
ARAL SEA
Syr-Darya River
Ili R.
Alma-Ata
Tashkent
MONGOLIA
CHINA
Kilometres
0
800

Figure 7E.1: Kazakhstan's position in the Soviet Union

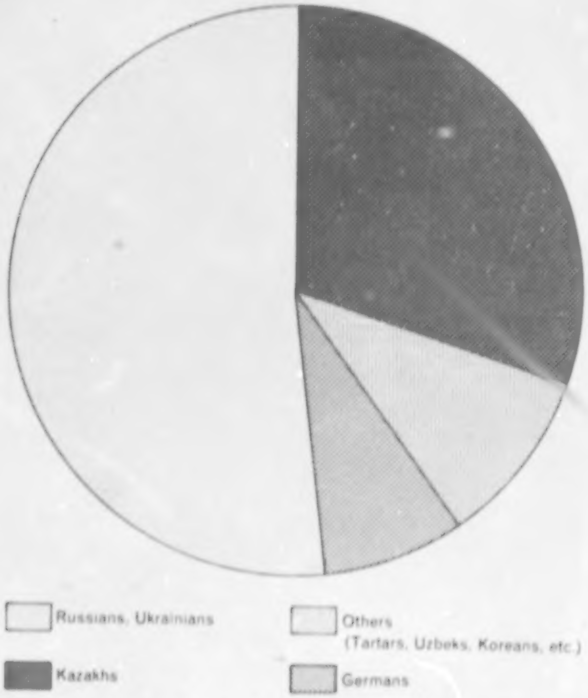


Figure 7E.2: Kazakhstan's population by ethnic group

people's traditional life? What evidence is there in one of the photographs of Kazakhs using a traditional skill in modern agriculture?

How big is Kazakhstan compared with all of East Europe (shaded in on figure 7E.1), and with the British Isles?

Soviet leaders wanted always to make their country independent of other countries—especially in growing all their own food. Much of the land in northern Kazakhstan and elsewhere was 'virgin' land—land that had never before been ploughed and cultivated. A great scheme was started in 1954 to develop these lands, and many thousands of volunteers from Russia and the Ukraine moved in to set up new state farms, to build roads, railways and grain elevators, and to prepare the land for new settlers.

First we should look at the basis for this expansion, and try to understand the problems encountered in developing and modernising the Republic of Kazakhstan.

Look at figure 7E.3: would you say that most of Kazakhstan received a lot of rain, or was rather dry? (Remember what is generally considered

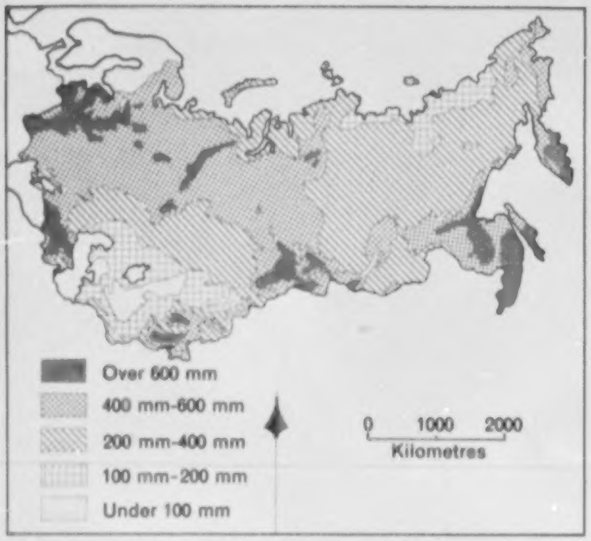


Figure 7E.3: Rainfall and snow in the Soviet Union each year

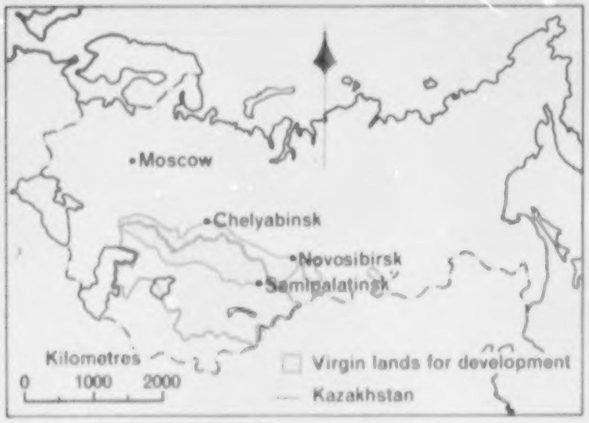


Figure 7E.4: 'Virgin Lands' of the Soviet Union

'dry' in Australia.) Which part is best off for the amount of water from rain and snow?

Where are the driest parts of Kazakhstan? Are these the 'Virgin Lands'? (See figure 7E.4.) How would it be possible to grow cotton, rice and fruit in these dry parts of the republic? (Something in figure 7E.1 might help you.)

On some days, when the southern lands are green and grain sowing has started, frosts and blizzards can be raging through the north. Such extremes are possible in this enormous, dry country where winters can be bitterly cold and summers are very hot.

Figures 7E.5, 7E.6 and 7E.7 show you something of the landforms in the north—90 per cent of Kazakhstan is plains and lowlands.

Now you are ready to tackle the Virgin Lands!

Soviet experts tell us that the Virgin Lands are suitable for growing wheat if enough rain comes during the year. Draw up a list of developmental tasks you would need to carry out in these lands before wheat could be grown for the first time. Think of soil preparation, how the land is already being used, how ploughing, planting, and harvesting will take place, and how goods will be moved into and wheat moved out of the area. Finally, who will do all this work, and where will they live?

You can begin to realise the headaches this project caused Soviet leaders, planners and workers.

Table 7E.1: Statistical details, Kazakhstan

Railways—length and cargo		
1913	2 100 km	1·1 million tonnes
1940	6 600 km	27·7 million tonnes
1971	14 500 km	230·0 million tonnes
Land sown to grains		
1913	2·2 million hectares	
1940	3·6 million hectares	
1970	21·5 million hectares	
Population		
1913	5·6 million	
1939	6·1 million	
1959	9·2 million	
1969	12·8 million	
Farms and equipment		
1913	1 200 000 small holdings	50 reapers, hay mowers 6 seeding machines
1940	7 296 collective farms 192 state farms	29 600 tractors 11 600 grain harvesters
1970	441 collective farms 1 550 state farms	220 000 tractors 110 000 harvesters

Refer to table 7E.1. What type of farm was formed to cultivate the Virgin Lands: state farms or collectives?

Look at figure 7E.8: in what part of Kazakhstan have most of the state farms been set up? Why have fewer been set up in the south and centre of the republic? (Look back to figure 7E.3 for a guide.) In which part of the republic are most of the grain-growing state farms? What type of farms would you expect north of the border shown in figure 7E.8?

How can you tell that the Viklorovsky state farm shown in figures 7E.5–7E.7 is not an old-established farm? Figure 7E.7 is very helpful here. What additions has man made to the landscape in figures 7E.5 and 7E.6?

Figure 7E.5: Dairy cattle on No. 6 section of the Viklorovsky state farm in Kazakhstan. Large farms are divided into sections, with local managers organising work brigades

Figure 7E.6: Harvesting wheat on the Viklorovsky state farm

Figure 7E.7: The main threshing area of Viklorovsky state farm, together with warehouses, granaries, garages, bakery, canteen, offices and some farmhouses

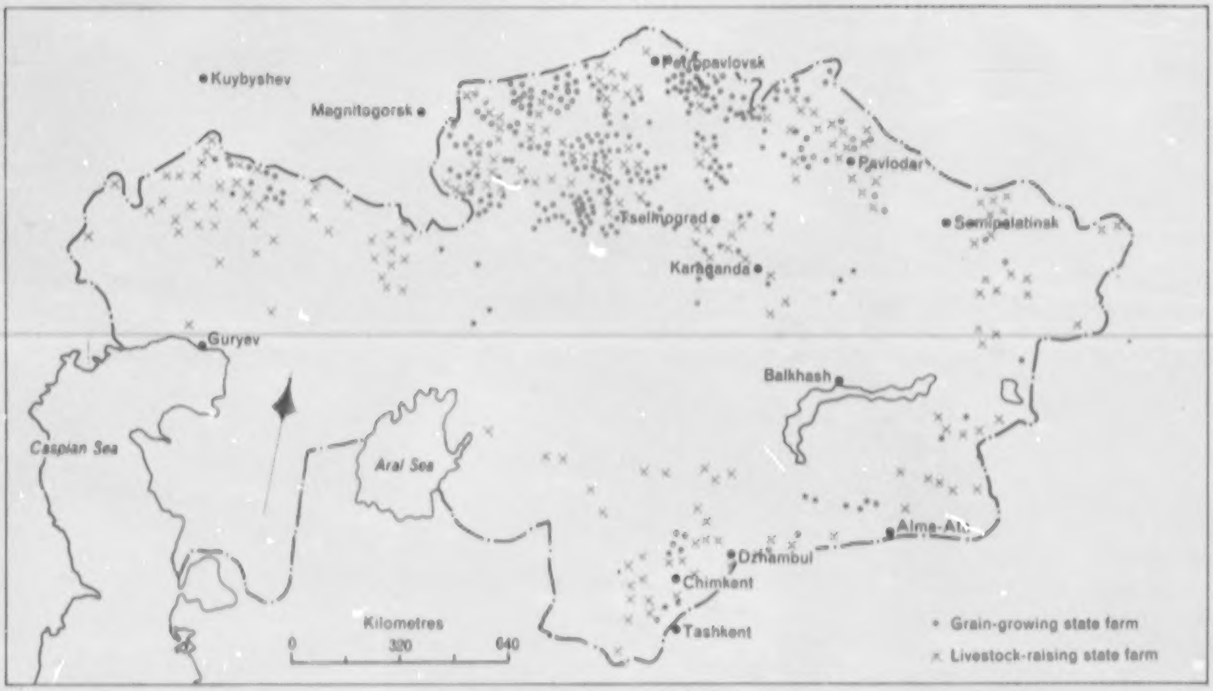

Kuybyshev
Magnitogorsk
Petropavlovsk
Pavlodar
Tselinograd
Semipalatinsk
Karaganda
Guryev
Balkhash
Caspian Sea
Aral Sea
Alma-Ata
Dzhambul
Chimkent
Tashkent
Kilometres
0
320
640
• Grain-growing state farm
× Livestock-raising state farm

Figure 7E.8: State farms in Kazakhstan

Some of the largest state farms are more than 120 000 hectares in area. What is there in the photographs that tells you these state farms are large?

State and collective farms in Kazakhstan are not always solely concerned with either wheat growing or livestock raising. What advantage would there be in having, as the Viklorovsky state farm has, both grain growing and livestock raising? Australian farmers in the wheat-sheep zone know the answer!

There is still a great shortage of machinery in the Virgin Lands, especially at harvest time. Does this show at all in the photographs or in the statistics of table 7E.1? Also check page 148, Unit C. Suggest how farm products are moved out of Kazakhstan to other parts of the Soviet Union.

As a general rule, when an area's total yearly rainfall is low, the rain usually is unreliable as well. Australian farmers have this problem—and those in Kazakhstan do, too: there were drought years from 1959 to 1963. What effect does this have on yields for every hectare planted, and on total grain production? Do you know of any measures taken by Australian farmers, that could be used in Kazakhstan? Overusing the land led to much erosion in the first years. Now much more is left fallow—how does this help?

Where else in the Soviet Union were there Virgin Lands similar to Kazakhstan? (See figure 7E.4.) Are there any left in Australia? Are any new lands being opened up at present in Australia, and by whom? When were the lands of Australia completely 'virgin'?

The Soviet Union developed the Virgin Lands to increase the amount of food available. What other way is there of producing more food without developing new areas? (A look at the end of page 147, Unit C, will help.)

Other developments in Kazakhstan

Kazakhstan is not only famous for its Virgin Lands development. It is now the Soviet Union's leading lead producing area, ranking second for zinc and copper, and third for coal and power. Oil from the republic, especially from fields near the Caspian Sea, may eventually supply up to 30 per cent of the Soviet Union's needs.

Industries based on local needs and the processing of Kazakhstan's raw materials have been planned and constructed (see figure 7E.8):

- power and steel near Karaganda's black coal deposits
- chemical works at Dzhambul
- aluminium refining at Pavlodar
- copper smelting at Balkhash
- agricultural chemicals at Dzhambul and Chimkent
- tractor and farm machinery at Pavlodar and Tselinograd
- meat processing plants at Petropavlovsk and Semipalatinsk
- hydroelectricity on the Irtysh and Ili Rivers.

There are now over 30 million sheep and 6 million cattle in the republic. Cattle numbers have increased slowly, but sheep numbers have grown rapidly, with the concentration on wool-producing varieties. Numbers could increase much more with better grasses and winter fodder supplies.

In old Kazakhstan there were no towns with over 50 000 people—now there are many. Over a hundred new towns have 'appeared' in Soviet times. Villages are now made up of permanent buildings, replacing the huts and temporary *yurta*. Cultural facilities, electricity, television and radio are no longer rarities. There are now 43 institutes producing some 20 000 graduates each year in such fields as geology, astronomy, biology and chemistry. Kazakh experts have worked on the Aswan Dam in Egypt, on the Darkham Power Station in Mongolia, and in factories in Yugoslavia and Cuba.

Refer back to the list of Kazakhstan industries. Suggest why the plants for meat processing and farm machinery production are located in 'logical' places. Look for the places on figure 7E.8 before you answer. (Also see Unit B for the principles of industrial location.)

Why would experts find it easier to develop an existing industry such as cattle and sheep raising, than to introduce a completely new one?

To what use could all the power produced in Kazakhstan be put? Actually, there is a surplus of power—what would you do with it?

What do you think is the *purpose* of some of the new towns?

The dams built on the rivers in the south are not only for power—what other use could there be? Where else in the world is this done?

Suggest why Kazakh experts would be capable of working on the Aswan Dam in Egypt and the power project in Mongolia.

The Soviet Union, like Australia, has large areas with few people. However, developing them is very expensive, and if the benefits from such projects are poor, they may not be worth the effort. In Siberia, the gas deposits, water power potential and mineral resources are attracting new developments, just as minerals are attracting people to the drier parts of Australia.

SHARING RESOURCES: THE FRIENDSHIP PIPELINE

The Soviet Union—with its great resources, its developed skills and experience, and its vast military strength—has closely guided and controlled its fellow communist nations in East Europe. Only Albania and Yugoslavia have been able to act more independently. Czechoslovakia in 1968 and Hungary in 1956 were prevented from taking independent action by Soviet invasions.

The Soviet Union is anxious to secure markets for its raw materials (oil, iron ore, coal), and at the same time to be able to import industrial products from the highly developed East European countries, mainly East Germany and Czechoslovakia. Russia also imports foodstuffs from East Europe during bad seasons within its own borders.

A recent article in the press illustrates this point:

> Impressment of Comecon producers to meet urgent Soviet needs swells the trade figure. Without Bulgarian, Hungarian and Romanian fruit, vegetables and preserves and Polish eggs and pigmeats . . . Soviet living standards would be lowered to hazard levels. During the 1966–70 Plan, the Soviet Union acquired 38 per cent of its vast merchant fleet additions from Comecon shipyards (79 of 120 East German-built ocean-going ships went under the Soviet flag in 1970), and Comecon contributions to the Soviet economy also included 54 large chemical plants and great quantities of machines, vehicles, raw materials, foodstuffs, drugs and other items.
>
> Oil (and other raw materials) were the main repayment.
>
> R. Lockwood, *National Times*, 28 June 1971

COMECON (Council of Mutual Economic Aid)

Cooperation between most of the communist nations is organised through COMECON (established in 1949). The Friendship Pipeline carrying oil from the Soviet Union to East Europe is one major example of such cooperation. Another is the Mir electricity grid centred on Prague; this links the COMECON countries, and means considerable savings in sharing electricity between the different peak-usage times of the nations. The same countries have organised an international railway wagon pool, so that, for instance, Bulgarian railway wagons do not have to return empty to Bulgaria across any other communist nation.

Recently, the members have planned to make their production of steel, cars and bearings more specialised, so that the country with the lowest production cost produces more of a particular product for the other members. Overall, the Soviet Union plays the dominating role, encouraging industrial production and securing markets and goods for itself.

Since 1945, major trade flows have changed direction in Europe. Prior to World War II, all eastern European countries carried out most of their trade with western European countries such as Germany, France and Italy. The coming to power of communist governments supported by the Soviet Union has changed this pattern (see tables 7E.2 and 7E.3).

Table 7E.2: Czechoslovakia—direction of export trade (percentage of total)

	1948	*1953*
Communist states	39·7	78·5
Capitalist states	45·7	14·9
Underdeveloped countries	14·6	6·6
	100%	100%

Note: The communist government came to power in Czechoslovakia in 1948

Table 7E.3: Where the exports go (1966 figures)

Country	Destination of its exports (% of total)		
	U.S.S.R.	Other COMECON states	Rest of world
Bulgaria	56	21	23
Czechoslovakia	35	36	29
East Germany	43	27	30
Hungary	34	35	31
Poland	32	24	44
Romania	32	23	45
U.S.S.R.	—	54	46
Yugoslavia*	18	20	62

*Yugoslavia is only an observer at COMECON meetings

The importance of the 'communist bloc' of states is thus reflected in the pattern of trade. However, many of the industrial products manufactured in the COMECON countries are of lower quality than those made in West Europe, the United States and Japan. Therefore, since the early 1960s, the East European countries have been trying to increase their trade with the West. The Soviet Union has not encouraged this trend, as it may weaken the COMECON ties.

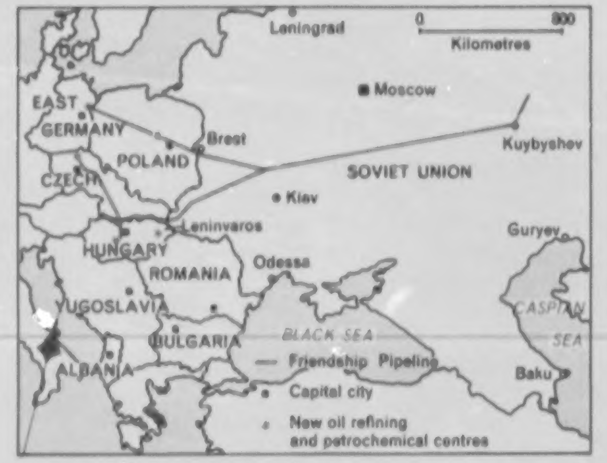


Figure 7E.9: The Friendship Pipeline, linking the Soviet Union and Eastern Europe

The Friendship Pipeline

See figure 7E.9, showing the Friendship Pipeline. Measure the length of the pipeline, including the two branches. It is the world's longest pipeline. Put this pipeline length on to a map of Australia, starting from Sydney or Melbourne; how far inland does it go? (Use your atlas, and don't confuse your scales!)

Which East European countries receive oil from this pipeline? Do they produce large amounts of oil themselves? (Check table 7B.2 on page 144.) Looking again at figure 7E.9, what use is made of this oil at a number of centres? None of these towns were of major importance until this pipeline was opened in 1964. Can you give a reason why planners might choose these small places, rather than the larger capital cities close to which the pipeline passes?

At the end of the Friendship Pipeline in East Germany is the town of Schwedt. Figure 7E.10 shows part of the new petrochemical complex that has been built there. Petrol, diesel oil and aviation turbine fuel, fuel oil, bitumen, lubricating oil, nitrogen fertilisers, sulphur, technical gas, plus materials for plastics and synthetic fibres are produced. Over 60 000 people live in Schwedt—once a village, before the refinery and a paper mill were established. Where else might a similar photograph have been taken along this pipeline? Could such a scene be found at a place in Australia?

The capacity of the Friendship Pipeline has now been doubled as far as Brest. This will allow more oil to be shipped to the enlarged refineries. Look at figure 7E.11: what does this show?

Figure 7E.10: Using 'Friendship oil' in East Germany

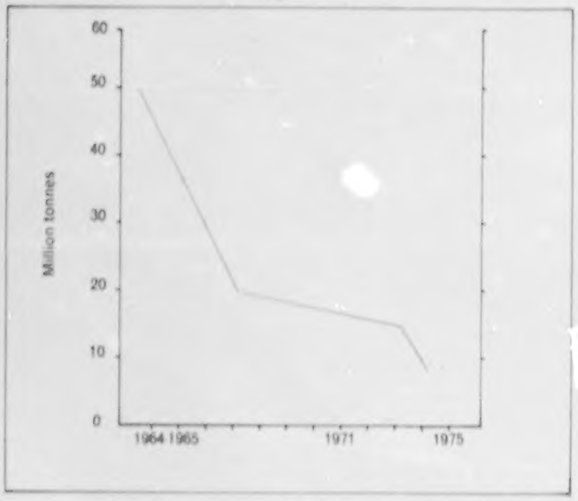


Figure 7E.11: Future capacity of the Friendship Pipeline

Of the future capacity, 10 million tonnes will go to Hungary every year via a new line, Friendship II. This will connect from near the border with the Soviet Union to a new town in Hungary called Leninváros, then on to the refinery at Százhalombatta. Draw this in on figure 7E.9. Can you think why it is cheaper to build the new line, rather than to double the line along the existing route?

Suggest the industries that will develop in Leninváros, and the effect this will have on employment in the surrounding area.

If you have worked through Unit C, you should know what benefits this pipeline can bring to farming in these countries.

Four communist countries in East Europe do not receive oil from the Friendship Pipeline. If you reread the introduction to this section, you might be able to suggest why this is so for two of them. Look at table 7B.2 on page 144—does this help explain why Romania does not get oil from the Soviet Union? Look at Bulgaria's position on figures 7E.9 and 7A.3. This country has little oil of its own—from where and by what means of transport could it get its oil?

Pipelines carrying oil and gas are not new to this part of the world. The Soviet Union has oil pipelines totalling 45 000 kilometres, and more than 75 000 kilometres of gas pipelines. Many lines are recent, having been laid to connect the industrial and city areas of the western Soviet Union with the very large fields in northern Siberia and around the Caspian Sea. Most houses and flats in Soviet towns, as in many Australian ones, now use natural gas.

Soviet resources are so large that pipelines are being laid to export natural gas to Austria, Italy and West Germany, as well as Czechoslovakia, East Germany, Poland and Hungary.

BREAKING DOWN THE DIFFERENCES IN YUGOSLAVIA

Contrasts within a nation

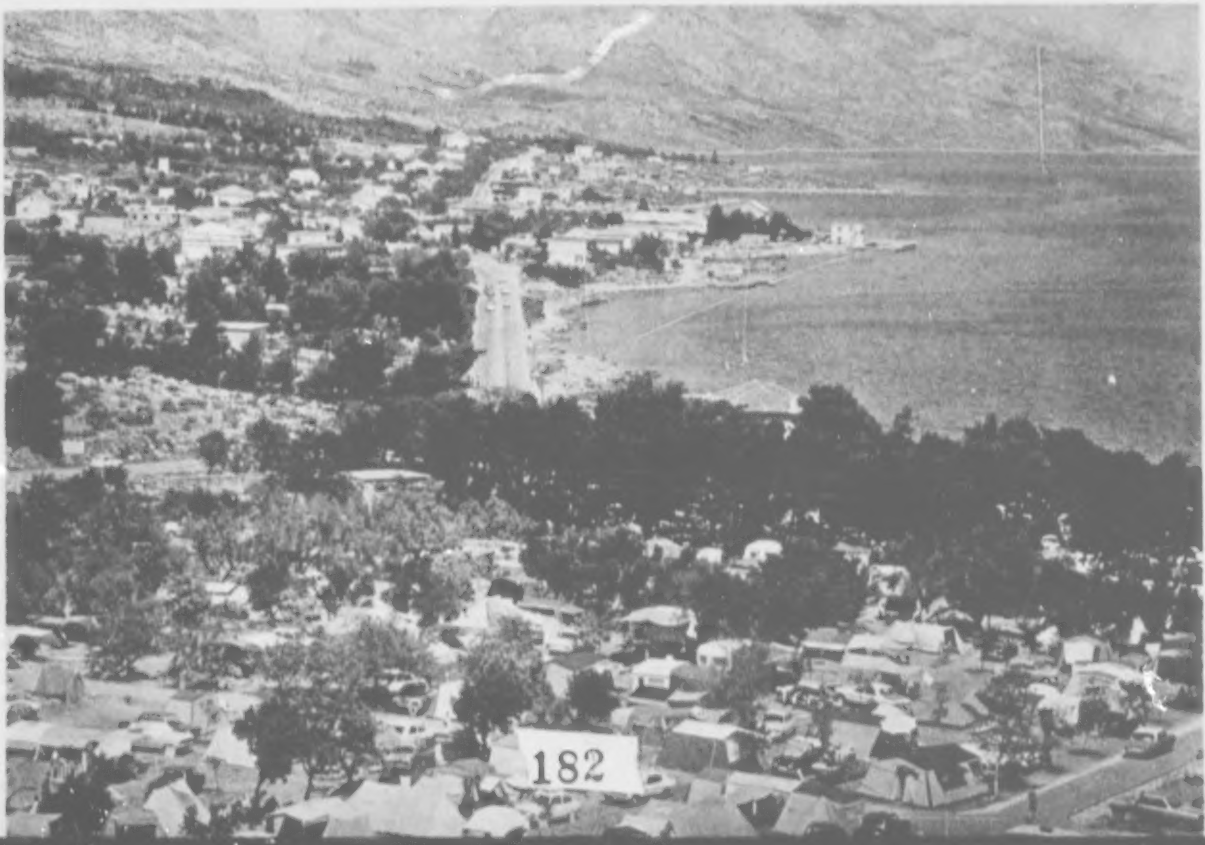
Beautiful coastal scenery, and a Mediterranean climate of hot dry summers, are a major attraction for more than 30 million tourists, who spent over $320 million in Yugoslavia in 1970.

Look at the photograph of the resort town in figure 7E.12. What might have been the original function of these coastal villages? If the tourists come mainly to the coast, which of the republics which make up Yugoslavia would get most of this money? (Check from figure 7E.17.) What changes could occur in the landscape because of all these tourists? (Think of some Australian coastal resorts.) How would the people in the tourist area become 'better off'? The Slovene and Croat governments are establishing resorts with casinos on the northern coast, to attract foreign tourists making weekend trips—from which country could this be? (See figures 7E.17 or 7A.3.)

Look carefully at the buildings in Sarajevo, shown in figure 7E.13: what shapes do you find that look 'Eastern' or Islamic? Yugoslavia has about 1 000 000 Moslems—a legacy of five hundred years of Turkish rule. How can you tell that this part of the town has not been planned recently, like the new suburb in figure 7E.16? Which area of the town is most similar to the layout of your home area?

What landscape feature is common to figure 7E.14 and the previous two photographs? Check back to figure 7A.3 to see how much of Yugoslavia is highland. Living in areas cut off from the major parts of a country tends to make people reluctant to change their habits. This helps explain some

Figure 7E.12: Zadar on Yugoslavia's Adriatic coast



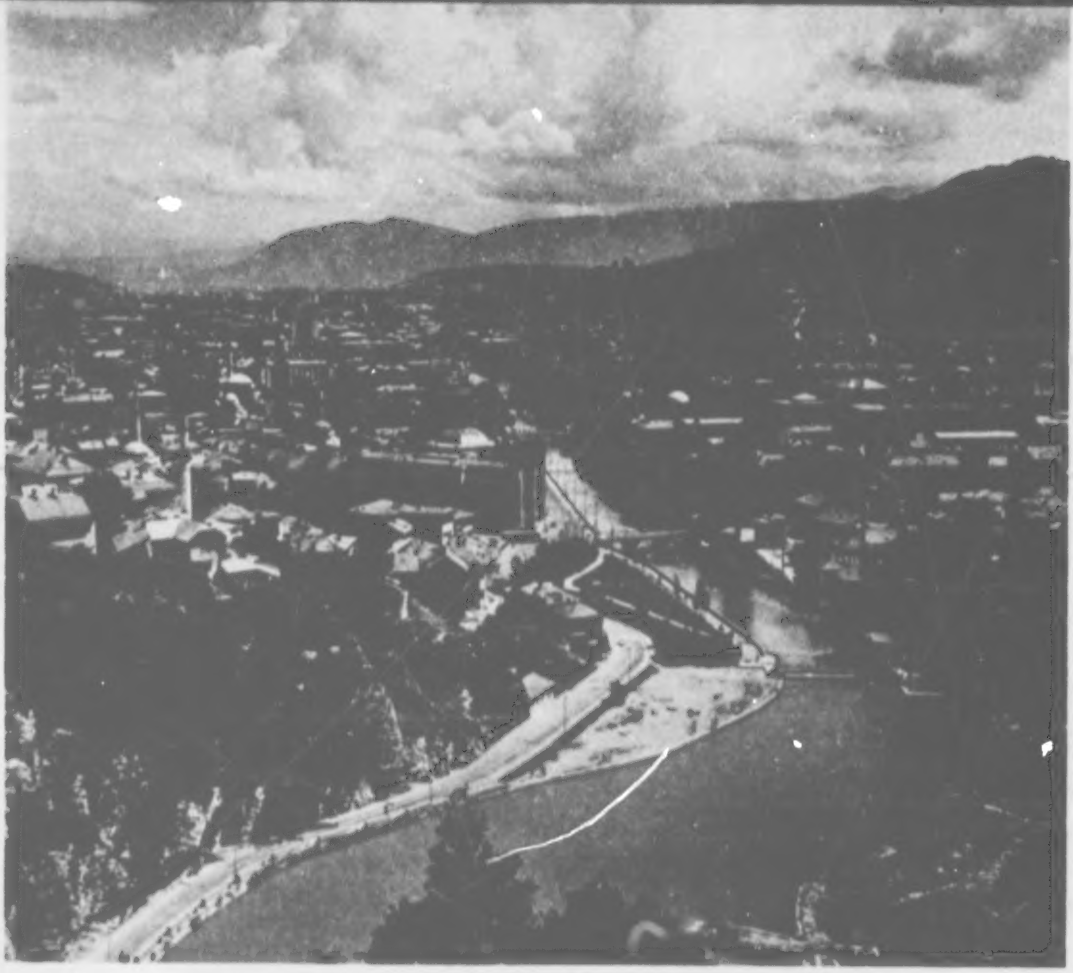
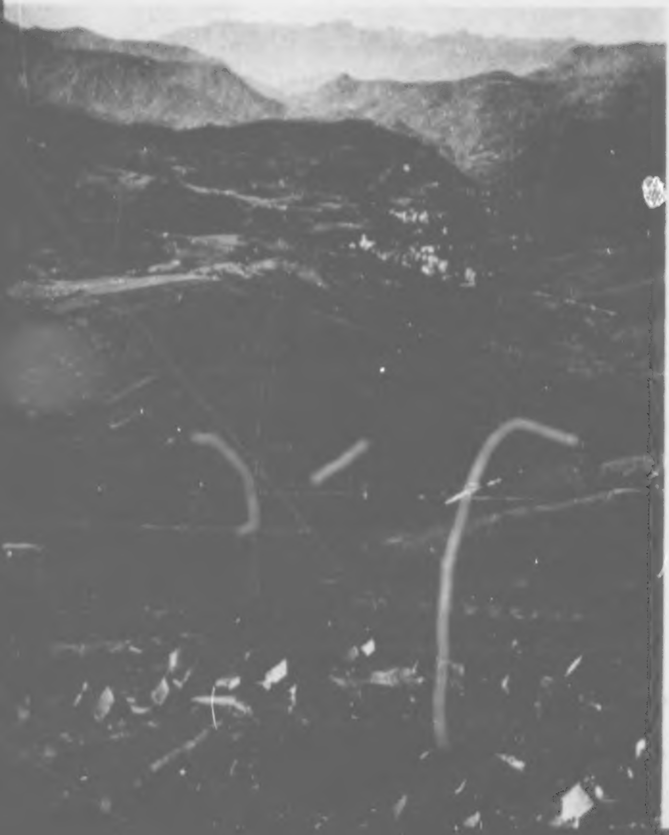


Figure 7E.13: Sarajevo

Figure 7E.14



of the differences in language and customs throughout Yugoslavia.

Look at the fields around the village in figure 7E.14: how does their size compare with the collective fields of figures 7C.3, 7C.9 and 7C.11? Most land in Yugoslavia is still owned by peasants. Suggest some practical problems in trying to convince the people in this village to form their lands into collective farms.

Yugoslavia is a nation with four official languages, two alphabets, three major religions, and about nineteen different national groups! Like Australia, with its different states and federal government, Yugoslavia is made up of six republics, two special regions (see figure 7E.17), and a central government in Belgrade. But the Yugoslav republics, because they are very different from one another, have much more say in their own affairs than is the case with our Australian states.

There are sharp contrasts in living standards between the republics. Slovenes in the north are better off than most Italians, while people in the extreme south are among the poorest in Europe.

Because of these great differences, Yugoslavia's leaders, under President Tito, have had to make many changes from the type of life found in other communist countries. For instance, most of the land is still owned by peasants and worked as small farms of less than 5 hectares; it is not organised into large collectives or state farms of the type found elsewhere in the communist world (see Unit C). People can even run their own small shops and factories; workers have the right to go on strike; and there is much more free discussion about government leaders, the price of goods, sex, and international politics than in other communist countries. Yugoslavia is a communist state which has been quite independent of the Soviet Union since 1948. This has helped in the adaptation of marxist ideas to the local environment.

Figure 7E.15 shows another of the differences within Yugoslavia—the number of people who could not read or write in 1953, when Yugoslavia was still a 'new' communist country.

Which republic had the smallest problem of illiteracy? (Check its name from figure 7E.17.) What do you know about this republic's living standards?

What do you notice about the proportion of illiterate people in Yugoslavia at this time, as you move from the north to the south? In which area could fewer than half the people read and write? What connection did there seem to be between illiteracy and living standards?

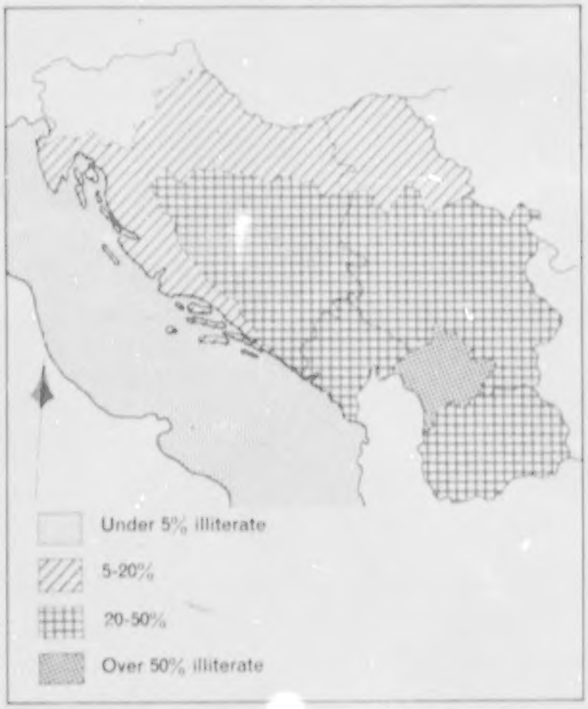


Figure 7E.15: Incidence of Illiteracy in the republics of Yugoslavia, 1953

Can you suggest why it would not have been important for people living in areas like that shown in figure 7E.14 to learn to read and write? Could it be important for them now?

Breaking down these differences

When Yugoslavia became a communist country, one of the major aims of the government was to develop the poorer lands and raise the living standards of the people. It has proved a very difficult job.

The main way this task was attempted was through the creation of a special development organisation and bank by the federal government. This raises money from all the republics of Yugoslavia, and then starts and aids various schemes in the poorer areas. Much of the money has been spent on large industry or transport facilities:

- new steelworks in Montenegro and Skopje
- railways and highways
- hydroelectricity schemes
- mining projects

as well as many smaller factories to produce goods people can buy.

Kosovo (see figure 7E.17), the poorest region, will receive about a third of this aid (almost $400 million) between 1971 and 1975, to help develop its large deposits of coal, lead, zinc and copper.

Money has also been borrowed from other countries. Yugoslavia even allows foreign companies such as Dunlop, Fiat and Daimler-Benz to join with Yugoslav firms and set up factories, even though all the other communist nations say that this is as bad as capitalism. Another method has been to encourage industries in the developed parts of Yugoslavia to establish branches in the south.

How is it possible for governments to 'raise money'?

Slovenes and Croats often complain about the development schemes. Can you think of why they, in particular, might complain?

Australia has a similar scheme of allocating greater amounts of money to the states most in need of development funds. Which states would these be? Which ones would be paying the most in revenue to the Commonwealth government? Do any of the leaders of the last group complain? Australia, too, has a bank that is concerned with development. Find out its full name.

From your study of industry in Unit B, you should know why the Yugoslav (and other) governments concentrate on *industry* to change living standards.

The impact of development

In some ways, the differences between the republics have increased because of the industrial development! The northern people claim that their areas need to be developed further, since they are not that well-off themselves. Many people are critical of the cost of the development schemes: for example, the steel made in Skopje will cost at least 20 per cent more than if it had been imported from the Soviet Union or West Germany.

But industry, which can create more wealth than traditional agriculture, has developed. For example, look at the steel figures in table 7B.2 (page 144). As a result of this development, is industry more evenly spread throughout the country? Find Yugoslavia on the steel industry maps of figures 7B.6 and 7B.7 (page 143), and compare the distributions of the iron and steel making sites: what is your conclusion? If industry is very expensive to develop, do you think it might be better to import the products from other countries?

Figure 7E.16 shows another result of the impact of development. Look at table 7D.1 on page 156 to find out why this new suburb of Grbavica in Sarajevo was necessary. Is it similar to other areas illustrated in the whole of this study? Which ones?

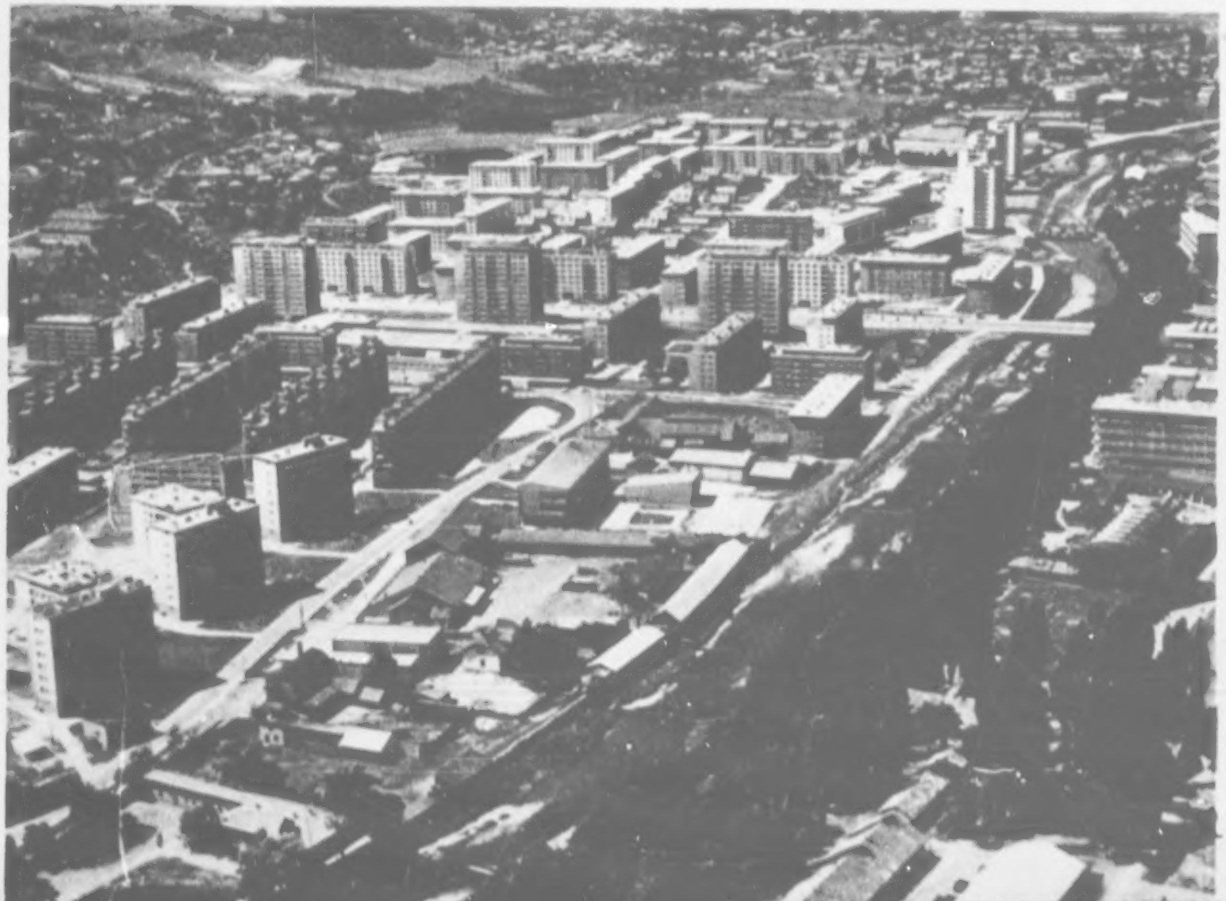
Now look at table 7E.4, showing how much people in Yugoslavia earn. Use the colour shading given with the map in figure 7E.17 to show the average income for each person in the various regions.

It is up to you to work out some conclusions from your filled-in map. Note that, in 1947, people in Montenegro had an average income of $65, while Slovenes had the highest income, with $246.

Table 7E.4: Average annual incomes for the various regions of Yugoslavia ($ Australian, 1970)

Bosnia and Hercegovina	$325
Croatia	$650
Kosovo	$180
Macedonia	$380
Montenegro	$310
Serbia	$470
Slovenia	$930
Vojvodina	$685

Figure 7E.16: Grbavica, a new suburb of Sarajevo



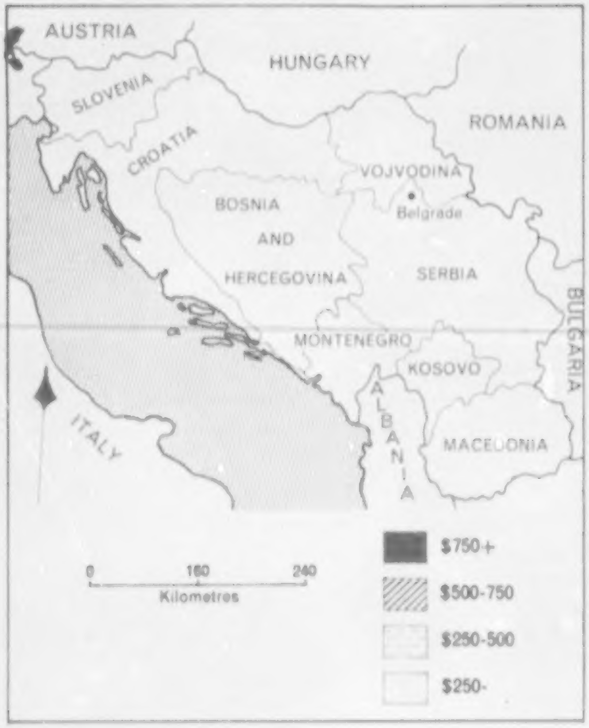

AUSTRIA
HUNGARY
SLOVENIA
CROATIA
ROMANIA
VOJVODINA
Belgrade
BOSNIA
AND
HERCEGOVINA
SERBIA
BULGARIA
MONTENEGRO
KOSOVO
ALBANIA
MACEDONIA
ITALY
0
160
240
Kilometres
$750+
$500-750
$250-500
$250-

Figure 7E.17

But, of course, wages and prices for most things have increased considerably, so it is hard to compare these figures exactly.

Another solution?

Many Yugoslavs cannot find permanent jobs at home—especially if they live in the central and southern republics. Over 360 000 are working in West Europe for short-term periods. Others have emigrated permanently: Yugoslavs make up one of the largest groups of migrants coming to Australia in search of a better life.

To achieve a more equal standard of living throughout Yugoslavia will take much longer than twenty or thirty years. It is possible that the northern republics will not allow their money to be used forever in expensive schemes in the south—but how could these areas then develop the towns, transport networks and educational levels needed to make life better for all Yugoslavs?

FURTHER ACTIVITY

Have you ever thought about these questions?

1. Where do the clothes you like best come from? Do you buy them all at the same store?
2. Where does the music you like best come from?
3. Where do your favourite singers or musicians come from?
4. Where do the song-writers come from?
5. Do the players in the football team you support all come from the local area?
6. Do the best racehorses come from any one part of Australia?
7. Do the people who live in your area support the local football team? Do they all like football?

You could investigate these problems by mapping your preferences, carrying out surveys, questioning different people, and making charts and other records of your findings. What conclusions can you draw?

8

Evaluation

If you read over again the introductory section on page 1, you will be reminded that what you have been primarily concerned with in this book has been where and how changes have occurred in a number of quite different situations in the world. In order to examine changes, you have had to use a wide variety of different types of data—maps, photographs, statistics, documents. Have you learnt to interpret this material accurately? These questions will test whether you can.

1. Figure 8.1 is a map of an area in Tanzania; examine it carefully, and then try to answer these questions:

(a) When cartographers make maps, they have to use many different scales, they have to use conventional signs for various features, and they have to place a grid on the map so that people can accurately locate places.

(i) Express in three different ways the scale given on the map.
(ii) What is meant by 'conventional signs'?
(iii) What is located at grid reference 848571?
(iv) In which year was the map originally drawn? (The date given in the caption is for the revised edition, not the original.)

(b) What is the shortest distance by road from Sanya Juu Post Office to Dutch Corner (G.R. 805522)?

(c) If you took the road through the Leoni, Pongo and Molomo Estates, how much further would you travel?

(d) The shorter route and the longer one in the previous two questions differ in the type of road surface. What differences are there?

(e) There is usually a close correlation between natural vegetation zones and relief. What changes in vegetation can you observe on a transect line from the south-west to the north-east corner of the map? To what extent are these changes linked with relief differences over the map area as a whole?

(f) Give an area map reference to show the location of the peak of Mount Lerongo. An area reference for a grid square is normally given by the four-figure reference of the bottom left-hand corner (see figure 8.2). What type of vegetation occurs in this area?

(g) What evidence is there from the names of places and farms on the map that this is a multi-racial society?

(h) Find Areas 1 and 2 marked on the map. Describe the differences between these two areas, using the following headings:

Relief
Vegetation
Population density
Types of farming
—Size of farms
—Crops

(i) Why do you think the farms in one area are larger than those in the other?

(j) Tanzania achieved independence in 1961. Suggest the changes that might have taken place since then in the farming systems shown on the map.

(k) Assume that you have enough money and are permitted to buy 225 hectares* of land for a farm. Give grid references to indicate the approximate area of the map extract that you would select for your farm. Justify your choice.

2. Study figure 8.3 carefully, and then assess the importance of the following factors influencing the distribution of cattle in Tanzania:

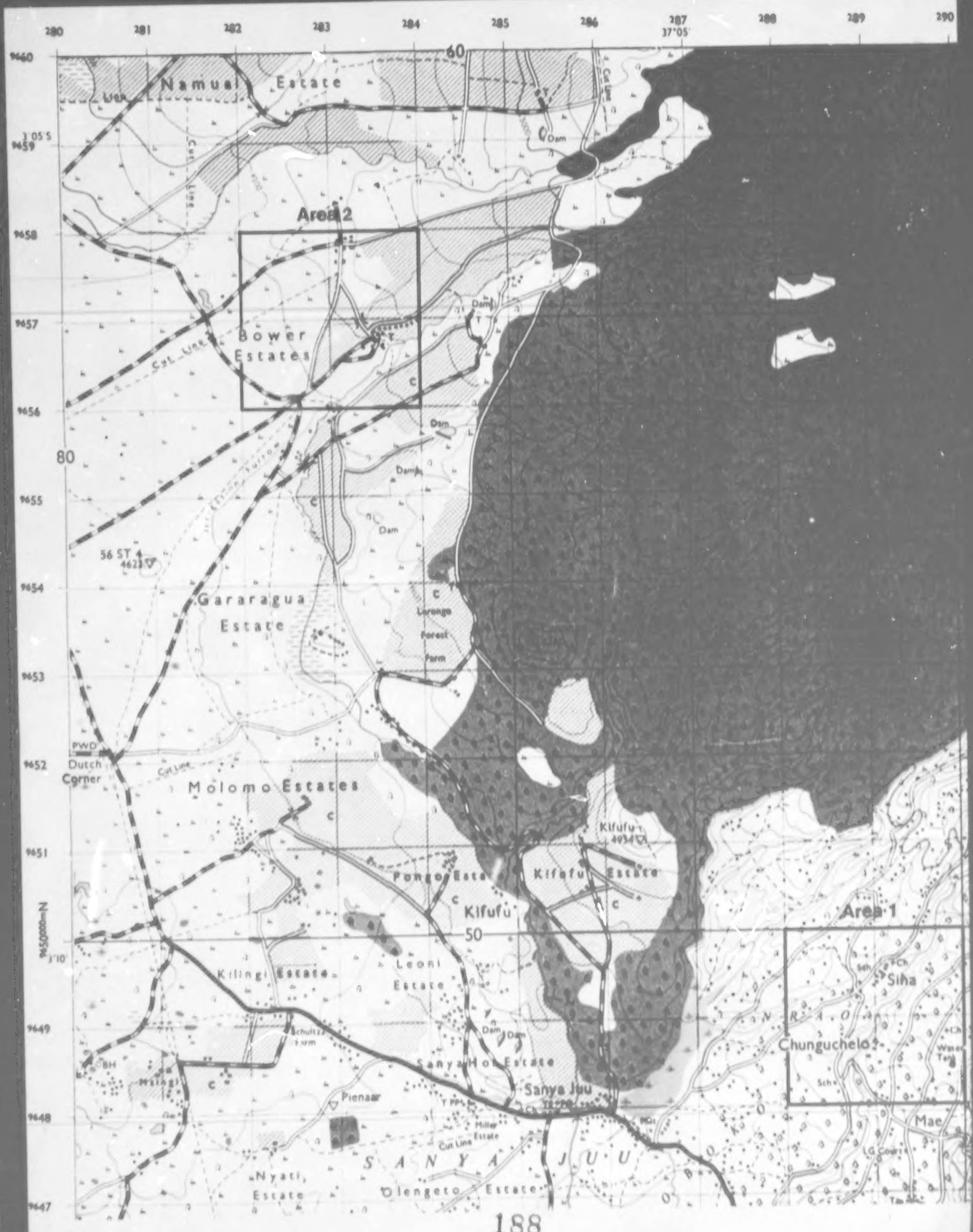
(i) the positions of the major market towns
(ii) the stock routes
(iii) the major rail routes
(iv) the areas affected by the tsetse fly.

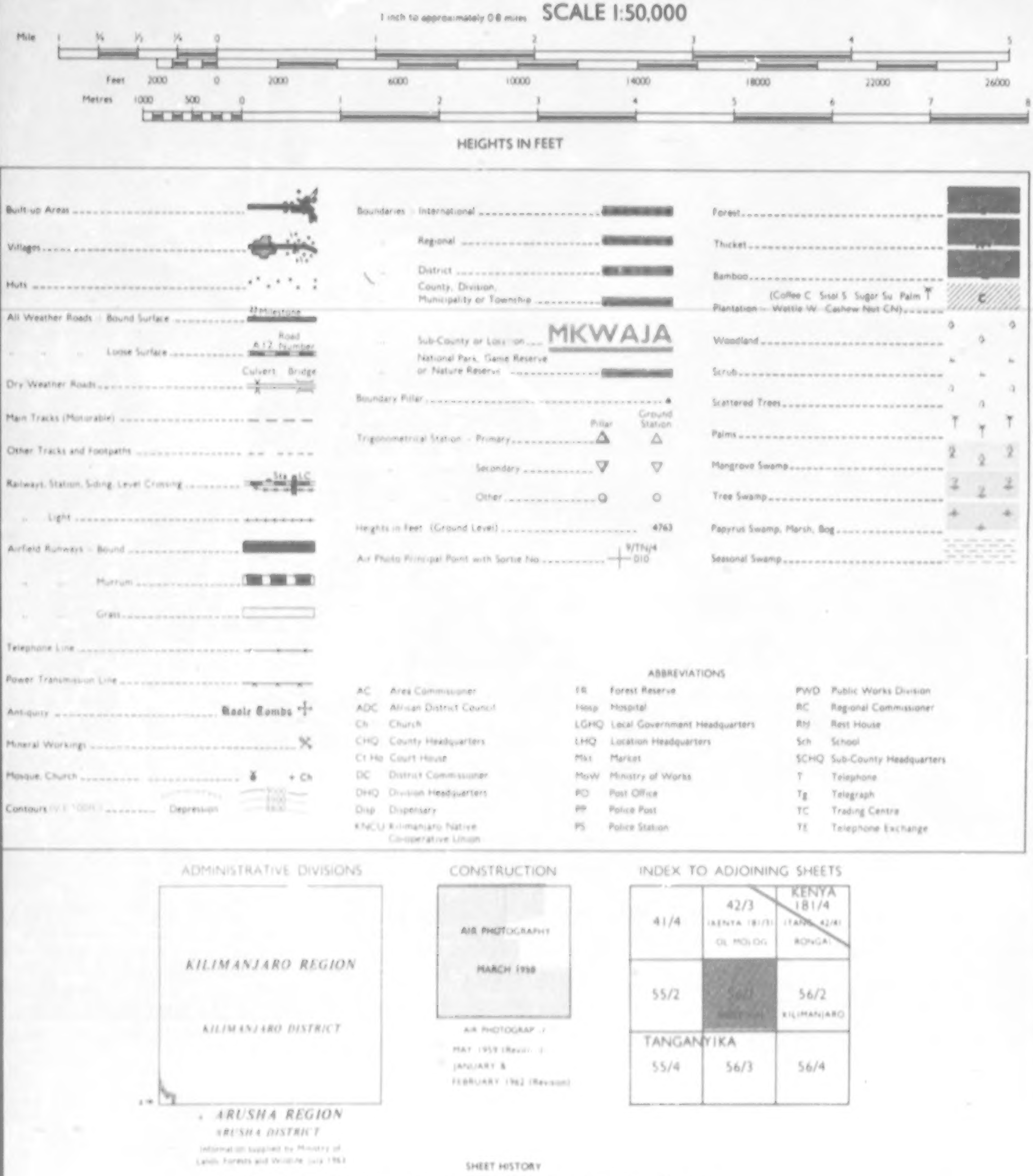
In what major respects does the distribution of cattle in Tanzania differ from that in the Kimberley region of Western Australia?

3. A range of maps may be at different scales and may show varying amounts of information. For example, figure 8.4 shows the spread of settlement in eastern Australia up to 1860.

---

* 1 ha = 10 000 m²


280
281
282
283
284
285
286
287
37°05'
288
289
290
9460
9459
3°05'S
9658
9657
9656
9655
9654
9653
9652
9651
9650000mN
3°10'
9649
9648
9647
60
80
50
Namuai Estate
Cut Lines
Cut Line
Dam
Area 2
Bower Estates
c
Lorongo Forest Farm
56 ST 4
4623
Gararagua Estate
PWD
Dutch Corner
Molomo Estates
Kifufu
4934
Pongo Estate
Kifufu Estate
Area 1
Siha
Sch
Ch
Chunguchelo
Water Tank
Killingi Estate
Leoni Estate
Schultze Farm
BH
Msingi
Sanya Hoi Estate
Sanya Juu
Pienaar
Miller Estate
Mae
Sch
LG Court
Nyati Estate
Olengeto Estate
SANYA JUU
NRAO
BOKO


1 inch to approximately 0.8 miles
SCALE 1:50,000
Mile 1 ¾ ½ ¼ 0 1 2 3 4 5
Feet 2000 0 2000 6000 10000 14000 18000 22000 26000
Metres 1000 500 0 1 2 3 4 5 6 7 8
HEIGHTS IN FEET
Built-up Areas
Villages
Huts
All Weather Roads – Bound Surface
Milestone
Road Number
A 12
Loose Surface
Culvert
Bridge
Dry Weather Roads
Main Tracks (Motorable)
Other Tracks and Footpaths
Railways, Station, Siding, Level Crossing
Sta
LC
Light
Airfield Runways – Bound
Murrum
Grass
Telephone Line
Power Transmission Line
Antiquity
Ruin Tombs
Mineral Workings
Mosque, Church
Ch
Contours (V.I. 100ft.)
Depression
Boundaries – International
Regional
District
County, Division, Municipality or Township
Sub-County or Location
MKWAJA
National Park, Game Reserve or Nature Reserve
Boundary Pillar
Pillar
Ground Station
Trigonometrical Station – Primary
Secondary
Other
Heights in Feet (Ground Level)
4763
Air Photo Principal Point with Sortie No
9/TN/4
010
Forest
Thicket
Bamboo
Plantation – (Coffee C Sisal S Sugar Su Palm Wattle W Cashew Nut CN)
C
Woodland
Scrub
Scattered Trees
Palms
Mangrove Swamp
Tree Swamp
Papyrus Swamp, Marsh, Bog
Seasonal Swamp
ABBREVIATIONS
AC Area Commissioner
ADC African District Council
Ch Church
CHQ County Headquarters
Ct Ho Court House
DC District Commissioner
DHQ Division Headquarters
Disp Dispensary
KNCU Kilimanjaro Native Co-operative Union
FR Forest Reserve
Hosp Hospital
LGHQ Local Government Headquarters
LHQ Location Headquarters
Mkt Market
MoW Ministry of Works
PO Post Office
PP Police Post
PS Police Station
PWD Public Works Division
RC Regional Commissioner
RH Rest House
Sch School
SCHQ Sub-County Headquarters
T Telephone
Tg Telegraph
TC Trading Centre
TE Telephone Exchange
ADMINISTRATIVE DIVISIONS
KILIMANJARO REGION
KILIMANJARO DISTRICT
ARUSHA REGION
ARUSHA DISTRICT
Information supplied by Ministry of Lands, Forests and Wildlife, July 1963
CONSTRUCTION
AIR PHOTOGRAPHY
MARCH 1958
AIR PHOTOGRAPHY
MAY 1959 (Revision)
JANUARY &
FEBRUARY 1962 (Revision)
INDEX TO ADJOINING SHEETS
41/4
42/3
(KENYA 181/3)
OL MOLOG
KENYA
181/4
(TANG. 42/4)
RONGAI
55/2
56/1
WEST HAI
56/2
KILIMANJARO
TANGANYIKA
55/4
56/3
56/4

SHEET HISTORY

First Edition prepared by the British Government's Dept. of Technical Co-operation (Directorate of Overseas Surveys) under the Special Commonwealth African Assistance Plan, 1963 (D.O.S. 422)
Field Survey Data supplied by Survey Division, Ministry of Lands, Forests and Wildlife, Tanganyika and D.O.S.
Air Photography by R.A.F. March 1958 and May 1959 and Hunting Surveys Ltd., January-February 1962
Field Revision by Survey Division, Ministry of Lands, Forests and Wildlife, Tanganyika 1963.

Figure 8.1: Extract from topographic map sheet—West Hai, 1:50 000, 1964 ***(Surveys and Mapping Division, Ministry of Lands, Housing and Urban Development, Dar es Salaam)***

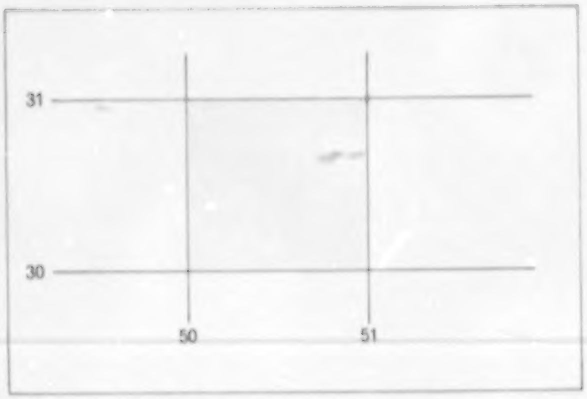


Figure 8.2: The reference for the shaded square is 5030

(a) Is this map larger or smaller in scale than the map in figure 8.1?

(b) In the study on the spread of settlement in the United States, you discovered the direction of movement which the settlers took, and how much land they settled. Does this map of Australia's settlement show a different or a similar movement to that which you discovered in the United States?

(c) Can you suggest reasons to explain any differences between the movements of people in the United States and Australia?

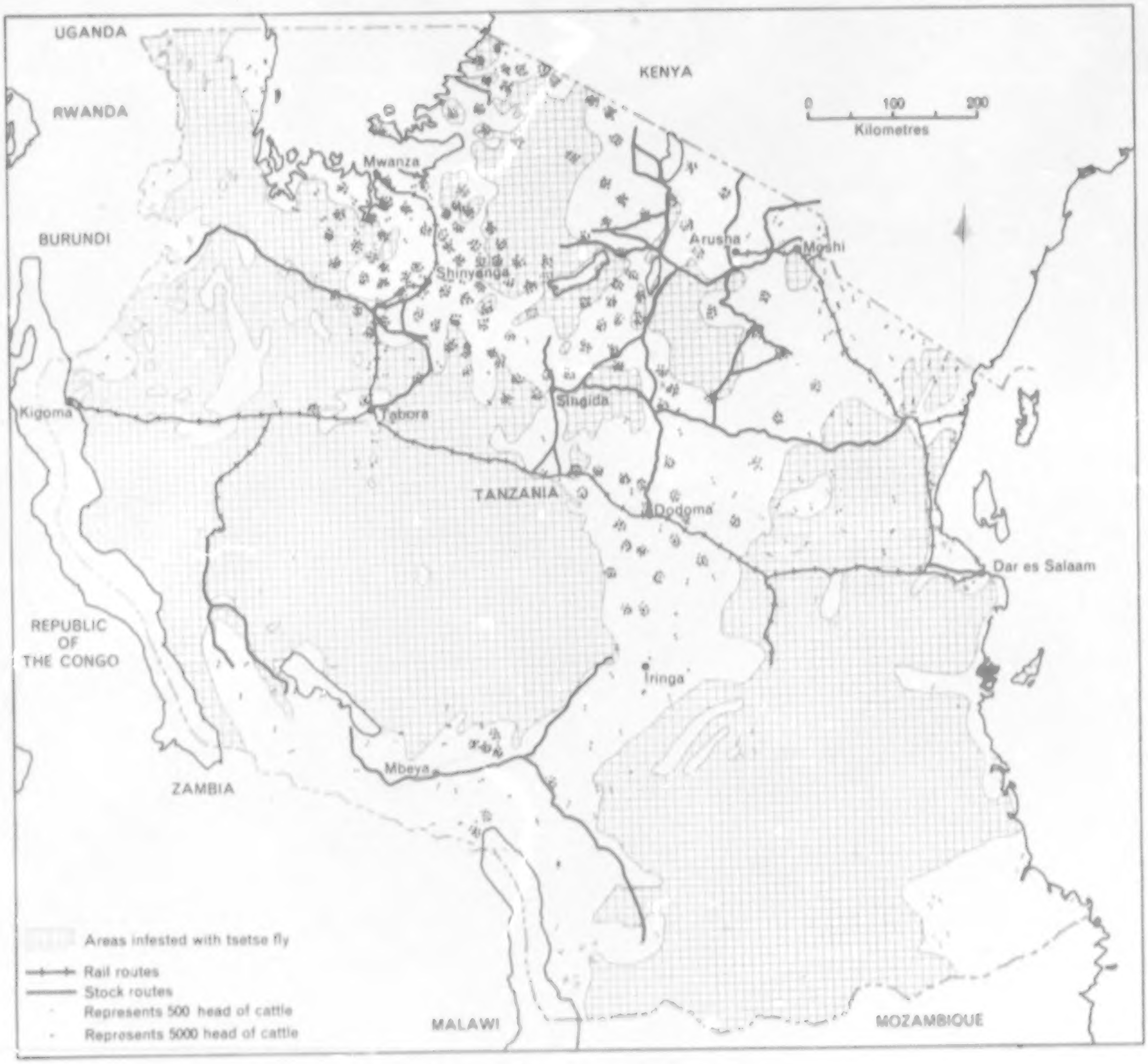

UGANDA
RWANDA
BURUNDI
KENYA
0
100
200
Kilometres
Mwanza
Shinyanga
Arusha
Moshi
Kigoma
Tabora
Singida
TANZANIA
Dodoma
Dar es Salaam
REPUBLIC OF THE CONGO
Iringa
Mbeya
ZAMBIA
MALAWI
MOZAMBIQUE
Areas infested with tsetse fly
Rail routes
Stock routes
Represents 500 head of cattle
Represents 5000 head of cattle

Figure 8.3: Distribution of cattle in Tanzania

4. Railway building played an important part in the spread of settlement in the United States.

(a) To what extent is the pattern of railway development in Australia similar to that in the United States? (See figure 8.5.)

(b) Railway development in Australia suffered from the disadvantages of differences in gauge. What evidence of these disadvantages can you detect on this map?

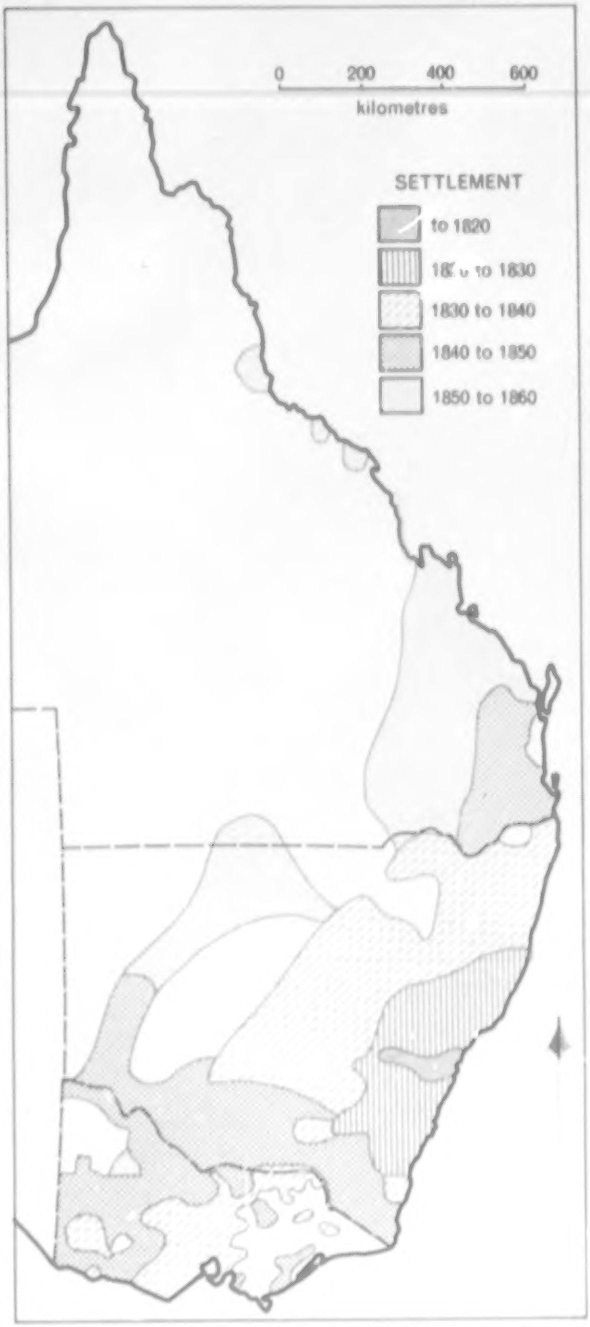


Figure 8.4: The spread of settlement in eastern Australia, 1788–1860

5. Look at figure 8.6, a photograph of the central area of Melbourne (date 1972).

(a) What differences are there between Dar es Salaam and Melbourne?

(b) Will Dar es Salaam eventually become like Melbourne? Do you think that this would suit the Tanzanians who live there?

6. Examine the statistics in table 8.1.

Table 8.1: Percentage of population living in urban areas

	1950	1970
U.S.A.	64·0	73·5
Australia	78·9 (1954)	85·5
U.S.S.R.	38·9	56.3
India	17·3 (1951)	19·7

(a) What changes can you see in this table?

(b) Can you suggest any reasons for these changes?

(c) What problems might be associated with such changes?

(d) How do you think a country such as Tanzania might best avoid these problems?

7. Examine figures 8.7–8.10; each pair of photographs shows an urban or rural area in Victoria, at two different times.

(a) What changes have occurred in these two areas? Do you think these changes are temporary or permanent?

(b) Are these changes similar to those that have occurred in

Tanzania;
Eastern Europe?

All these questions have tested whether you are able to use various types of evidence. Here are some other questions which will test your understanding of what you have read and examined in this book.

8. You have just been nominated as a pen friend for a student in Tanzania who is in the same form as yourself, though approximately two years older. Write a letter describing your everyday life at home and at school; take care to include those points which you think the pen friend would find interesting or enlightening.*

---

* Arrangements can be made for the letter to be forwarded to a suitable address in Tanzania, if your teacher sends it to Michael Achurch, c/o Jacaranda Press Pty Ltd, 37 Little Bourke Street, Melbourne 3000.

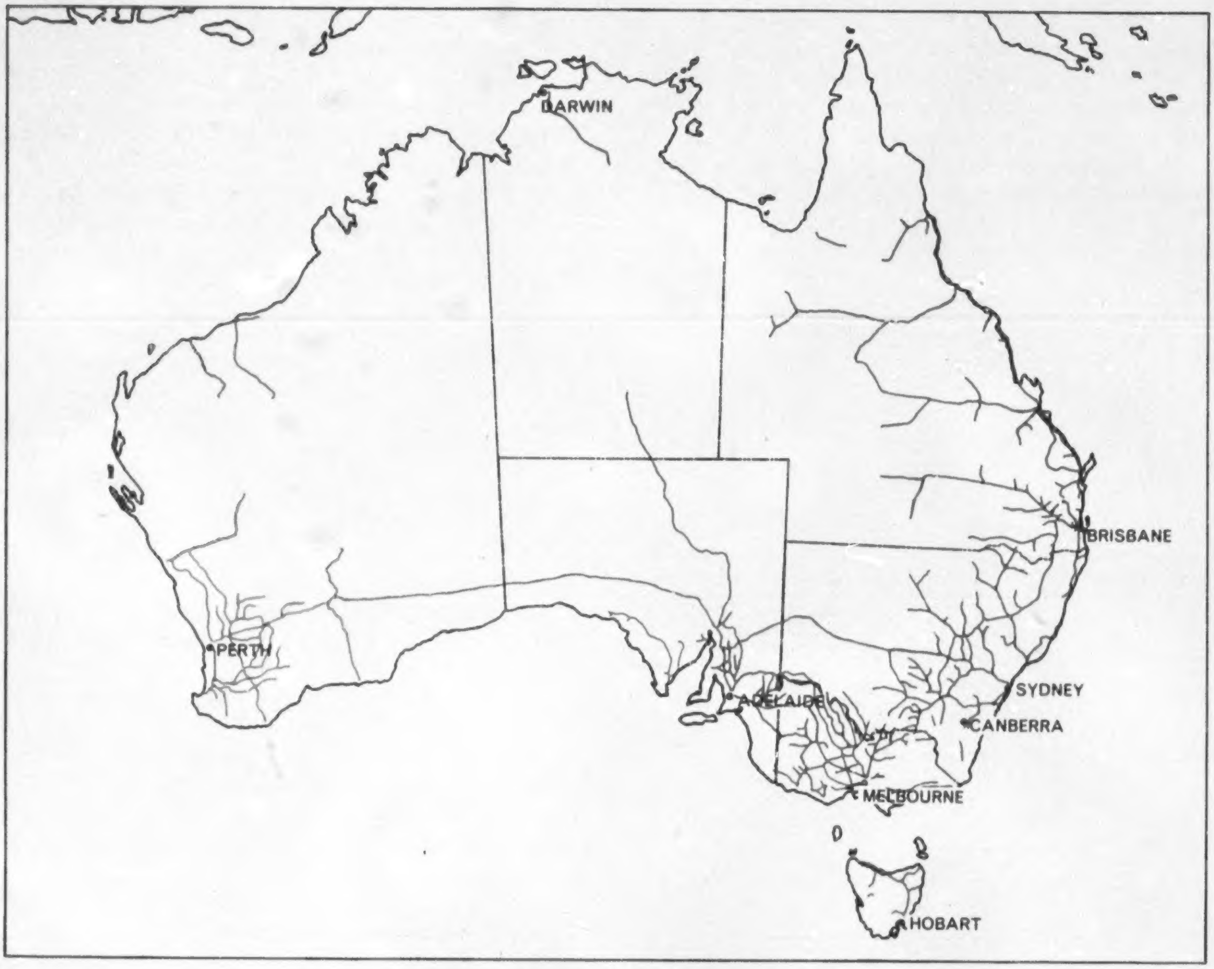
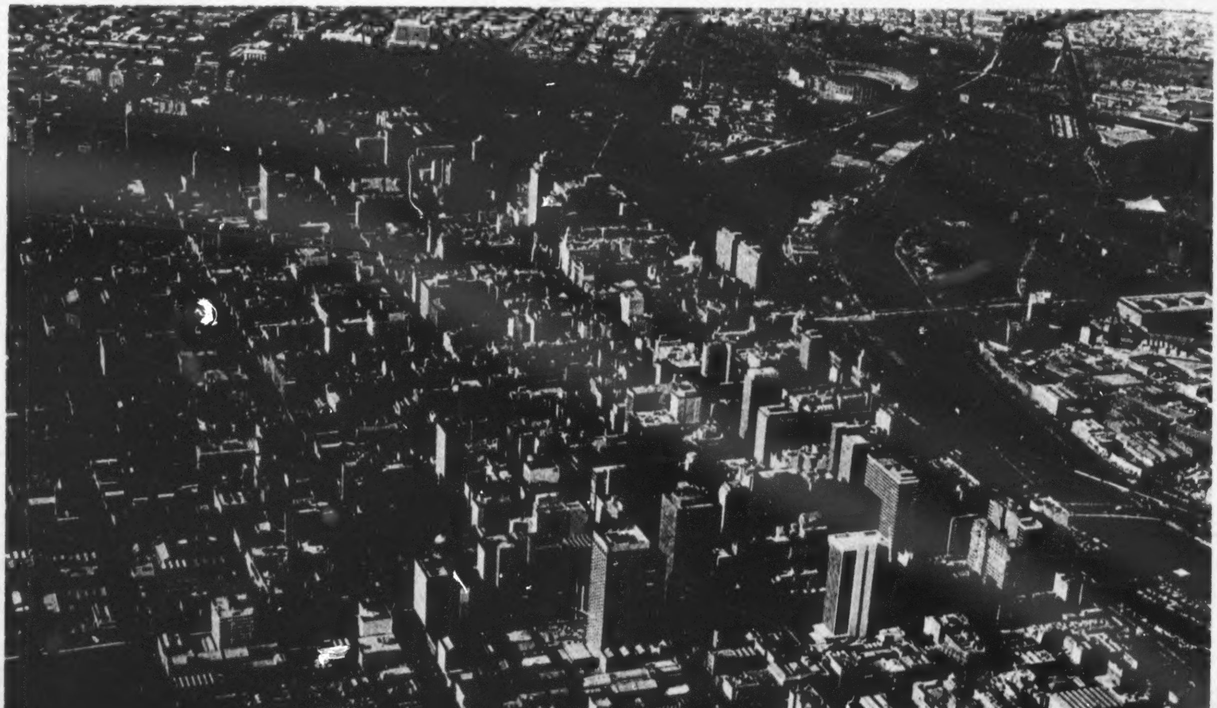

DARWIN
BRISBANE
PERTH
SYDNEY
ADELAIDE
CANBERRA
MELBOURNE
HOBART

Figure 8.5: Railway communications in Australia

Figure 8.6: The central area of Melbourne, 1972



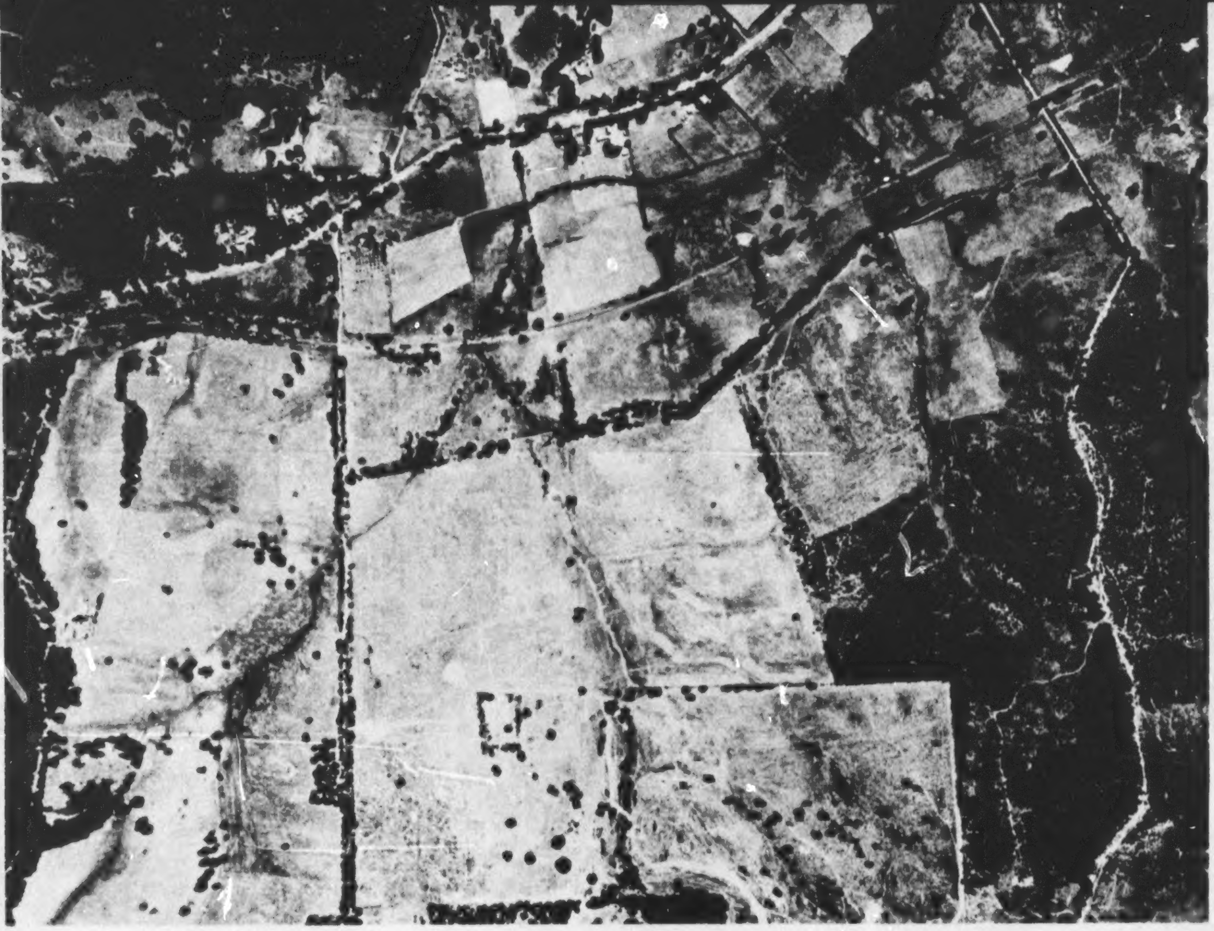
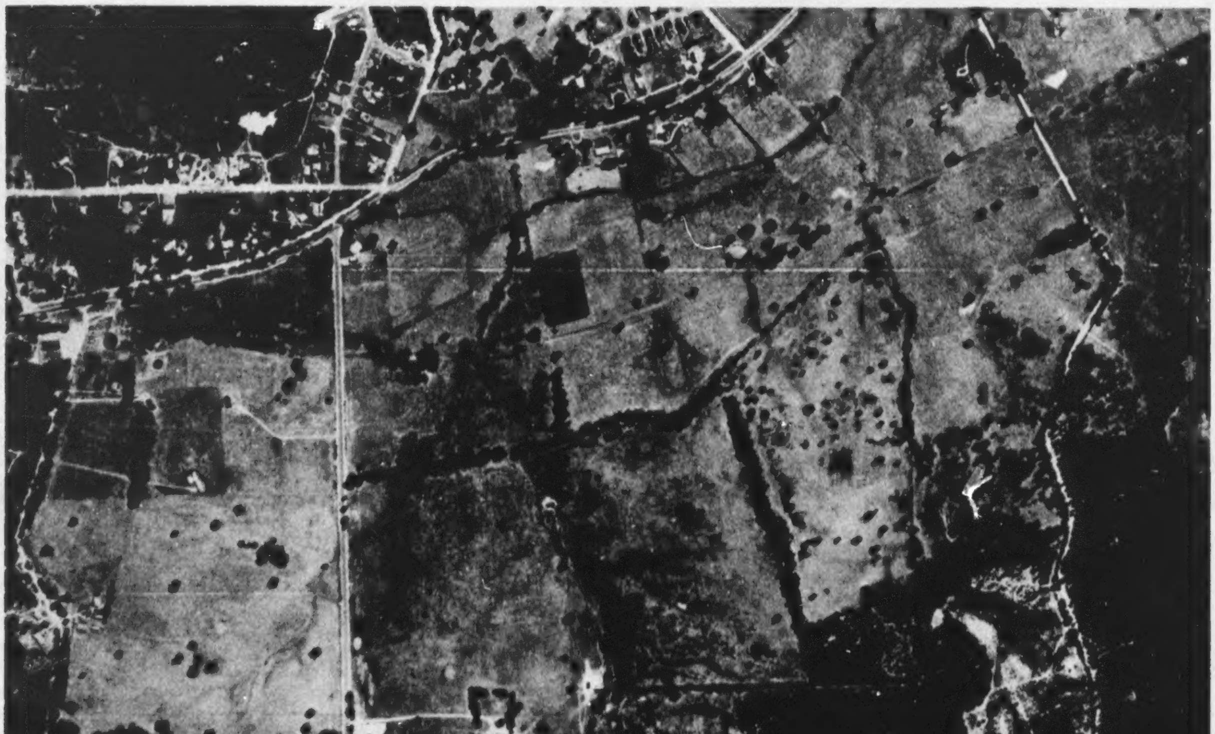


Figure 8.7: A rural area in 1957

Figure 8.8: The same area in 1971



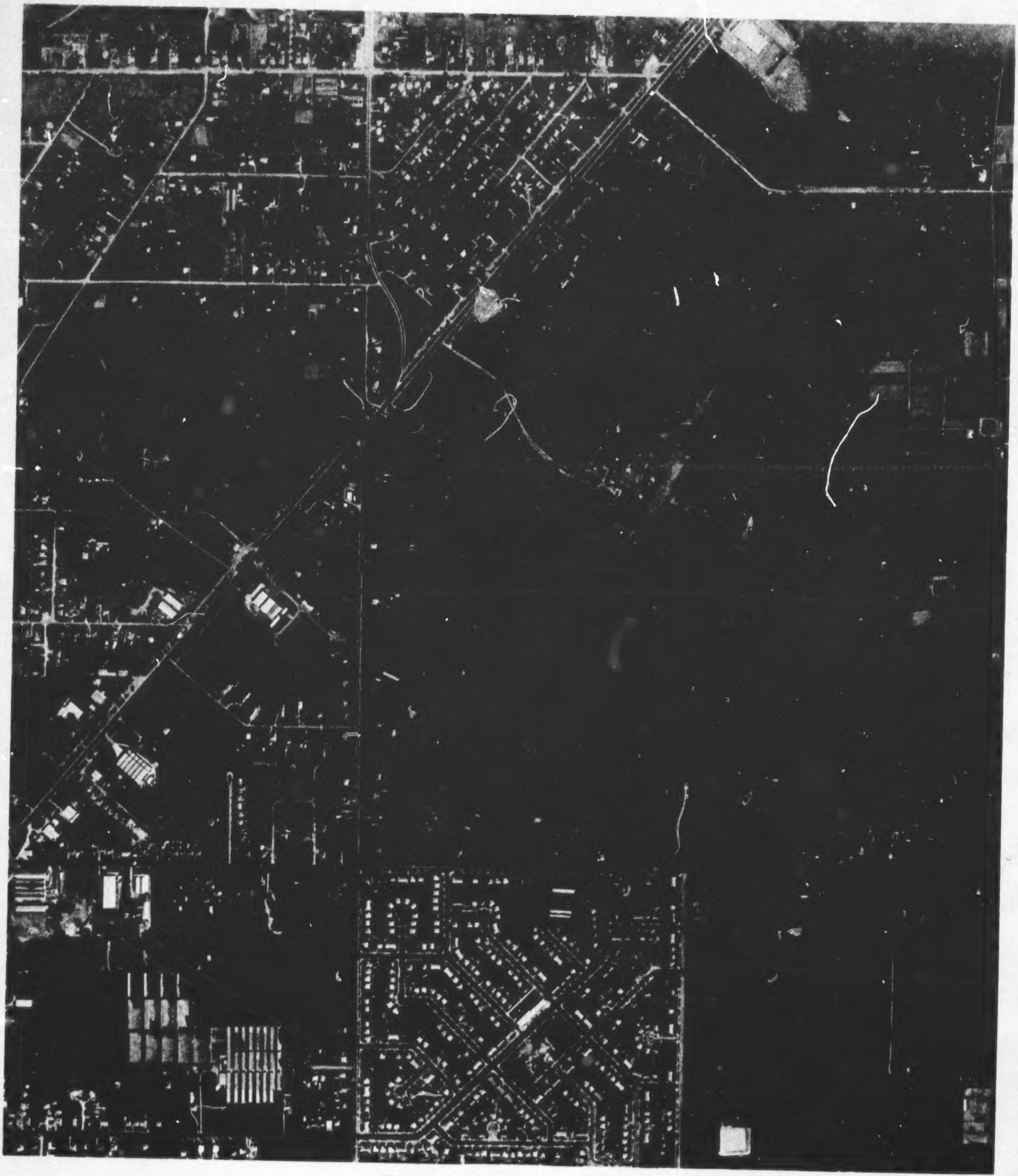


Figure 8.9: An urban area in 1956

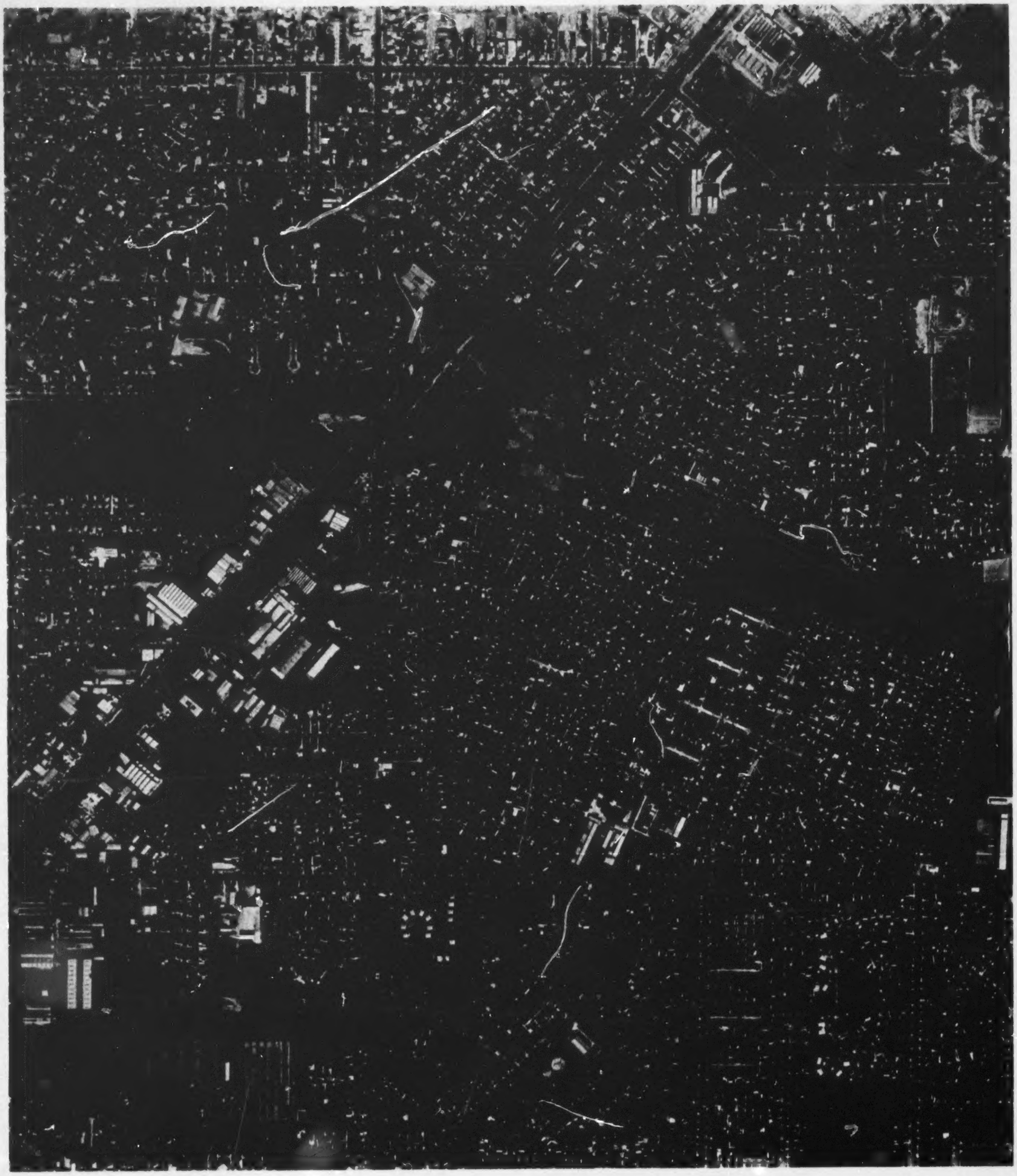


Figure 8.10: The same area in 1972

9. In two of the studies in this book (Eastern Europe and India), you read about developments and changes in various types of factories.

(a) What difference did you notice in the types of factories in these two areas?

(b) What caused the factory developments in each of these areas? Were the reasons the same? Why?

10. One of the major features of each of the studies has been that agriculture is a very important activity which is constantly changing. You have looked at farms in Eastern Europe, the United States, Tanzania, India and Australia.

(a) Compare farming in each of these places. What do you think are the most significant differences?

(b) In all of these places, changes are occurring. What is causing these changes? Are the causes the same in every place? Why? Are the changes happening at the same rate in each place?

11. Write a newspaper article entitled 'Change'. Describe the changes that have appeared to be most startling in altering the earth's surface.

INDEX

Air-beef scheme 59
Amul Dairy 7, 9, 10
Anand 4, 5
Apartheid 53
Artificial insemination 8
Aswan 13

Beef cattle
  Iowa 127–8
  North-west Australia 55–60
  Pennsylvania 123–4
  Russia 151, 169

Cambay 4
Capital investment 138
Capitalist farmer 96
Car production 142, 143
Cash crops 6
Caucasus 134
Central planning office 138
Coffee industry 29–30
Collective farm 145-7, 150-5
COMECON 163, 169
Commune 147
Contour farming 120
Contour ploughing 116, 120
Contrast in living standards
  Anand 4, 10
  Sofia/Budapest 158, 159
  Tanzania 15
  Yugoslavia 172–4
Cooperative farming 16, 29
  (see also *Ujamaa*)
Cooperative marketing
  Anand 7
  Tanzania 25
Cotton, Ord River 61, 63
'Cover crop' 74
Culture 132
Cyclones 59, 70

Dairying
  Kaira District 7–10
  Pennsylvania 119–20
Dampier 65
Dar es Salaam 38–46
Dunaujváros 139, 140
Durack family 56

Education
  Communist countries 158
  Esperance 78
  Kaira District 9
  Tanzania 16–20, 49
  Tom Price 70–71
  Yugoslavia 174
Eisenhüttenstadt 141
Equality 164, 174
Esperance district 72–9

Family size 3, 18
Five year (development) plans
  Tanzania 14, 46
  U.S.S.R. 142, 149
Flying Doctor Service 60
Fodder crops 127
'Force of ideas' 133
Foreign investment in
  Libya 53
  North-west Australia 64
  Russia (nineteenth century) 134
  South Africa 53
  Tanzania 27
  Yugoslavia 174
'Free-enterprise' economies 138
Friendship Pipeline 169–72
Frontier (settlement) 86

Goldsworthy Mining Ltd 65
Government assistance
  corn in U.S.A. 127
  CSIRO 64
  Esperance Downs Research Station 73, 74
  Ord River scheme 61–4
Government regulation of
  prices in U.S.S.R. 147, 158
  soil conservation (U.S.A.) 127
  tobacco industry (U.S.A.) 115

Haematite 64
Hamersley Iron Pty Ltd 65, 69
Health services
  Communist countries 158
  Kaira District 5
  North-west Australia 60
  Tanzania 49
Hogs 101, 127
Housing
  Anand 4
  Dar es Salaam 43, 46
  Moscow 161, 163
  Russia 155-7
  Tanzania 25
  Tom Price 69, 70
  U.S.A. (early) 100, 133
  Vanskhilla 7
Hydroelectricity
  Kazakhstan 169
  Uganda 13

International aid
  Austcare 11
  China 54
  Colombo Plan 8
  Community Aid Abroad 11
  F.A.O. 48
  Food for Peace 11
  New Zealand 10
  Oxfam 8
  Russia 169
  UNICEF 10
International Coffee Agreement 29
International cooperation 169–70
Iowa 99, 127
Irrigation
  Aswan 13
  Lake Argyle 63
  Ord River project 61, 63

Jinja 13

Kazakhstan 164–9
Kilimanjaro region 29
Kimberley district 55–64
Kremlin 159
Kununurra 61

Language difficulties
  Tanzania 17
  Yugoslavia 173

Legumes 123, 127
Lenin 133, 147
Libya 53
'Line of settlement' 86, 88
Lucerne 8, 9

Mao Tse-tung 135
Marx, Karl 132
Mining, iron ore 64–8
Moscow 159–63
Mount Newman Iron Ore Co. Ltd 65
Mwadui 37

Nationalization 53, 134, 135, 138
North Carolina 86, 115
Nyerere, President Julius 16, 26, 54

Oil
  Friendship Pipeline 169–72
  Kazakhstan 168
  Libya 53
Ord River scheme 61–4

Paraburdoo 65, 68
Pennsylvania 82, 85, 88, 119, 123
Pilbara region 65 ff.
Pilgrim Fathers 80
Plantation (or estate) farming
  Africa 26–31
  U.S.A. (eighteenth century) 85
Political change 13, 14, 133
Pollution 124
Port Hedland 59, 65, 68
Poverty, vicious cycle of 7, 61
Pravda 148
Pulses 6

Racial characteristics 11, 12
Railway development, U.S.A. 107–8
Regional self-sufficiency 138
Religion
  Hindu 4
  in Tanzania 18–20, 43
  Moslem 172
Revolution 54, 133
Road train 59
Rotation cropping 116
Rotation, pasture 123, 127
Rural population
  Africa 20, 35
  Eastern Europe 146
  India 6

School of the Air 60
'Self-reliance' 48
Sequent occupance 96
Settlement pattern 111
Shamba 20–6
Sheep
  Eastern Europe 148, 151, 169
  Esperance district 74–8
Shopping facilities
  Anand 5
  Communist countries 152–4, 158
  Dar es Salaam 43
  Tom Price 69–70
Sisal industry
  growing 27
  processing 27
  reorganization 28
Small-holding
  Hungary 154-5
  Tanzania 29–30
  Yugoslavia 174
Socialism, African 54
Soil deficiency 74
Soil erosion 128, 168
South Africa 53
State farm 147, 148
Steel production 139–44
Subterranean clover 73, 74

Tanzam railway 24, 42, 53
Thika 35–8
Tobacco 81, 85, 88, 115
Tom Price 69, 70
Tourism in Yugoslavia 172
Trace elements 73
Transport
  Africa 53, 54
  Communist countries 148, 158
  Esperance district 78
  India 4, 5, 6
  North-west Australia 59, 65, 68
  U.S.A. (early) 92–3, 97, 104–6, 107–8

Ujamaa policy 16, 25, 48–52
Ukraine 134
Urban growth
  Africa 48
  Dar es Salaam 38–47
  East Europe and U.S.S.R. 150, 155, 163–4
  Moscow 159–63
  Mwadui 37
  Thika 35–8

Vanskhilia 6, 7
'Virgin Lands' 148, 166

Wachagga tribe 29
Water supply
  Africa 19, 21, 30
  Kaira District 6
  North-west Australia 60, 61, 70

Xerophytic plant 27